CounterAttack
TRAFFIC RESEARCH PAPERS

1988

Province of British Columbia
Ministry of Labour and Consumer Services

DRINKING DRIVING
COUNTERATTACK

A joint program of the Ministry of Labour and Consumer Services
and the Insurance Corporation of British Columbia

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TRAFFIC RESEARCH PAPERS

1988

TRAFFIC ACCIDENT TYPES

DRIVER CHARACTERISTICS

PUBLIC ATTITUDES, KNOWLEDGE AND BEHAVIOURS
REGARDING DRINKING DRIVING

TRAFFIC EPIDEMIOLOGY

THE COUNTERATTACK PROGRAM

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NOTE

The views expressed in this publication are entirely those of the writer and do not necessarily represent the views or policies of the Ministry of Labour and Consumer Services or the Province of British Columbia.

OTHER COUNTERATTACK RESEARCH PUBLICATIONS

CounterAttack Traffic Research Papers, 1987, Ministry of Labour And Consumer Services, British Columbia, 1988.

This is a collection of ten research papers; a description of the drinking driving CounterAttack Program activities and data sources; a program evaluation guide for community volunteer groups; and a listing of the Federal and B.C. laws relating to drinking driving. The research papers include: an analysis of accident and charge rates per kilometer of driving; the relationship between the economy and traffic accident rates; a factor-analytic investigation into the number of types of traffic accidents that commonly occur; analyses of the trends, characteristics, persons involved and consequences of motorcycle and pedestrian casualty traffic accidents, and traffic accident epidemiology in terms of types, locations, victims, causes and Canadian Criminal Code traffic charges by policing jurisdiction. 251 pp. (see also Appendix B herein.)

CounterAttack Traffic Research Papers, 1986, Ministry of Attorney General, British Columbia, 1987.

This is a collection of eleven research papers on traffic-related issues compiled by the CounterAttack Program during 1986. Topics covered include: the relationships between driving record and traffic accidents; a comparison of injury-only and fatal traffic accidents; intersection traffic accidents; weather-related traffic accidents; the causes of fatal traffic accidents; the role of alcohol in fatal traffic accidents; and traffic accident epidemiology in terms of types, locations, victims and causes of casualty-producing traffic accidents. 222 pp.

CounterAttack Traffic Research Papers, 1985, Ministry of Attorney General, British Columbia, 1986.

This is a collection of eleven research papers on traffic-related issues completed by the CounterAttack Program during 1985. Topics covered include: influences on traffic accident frequency and severity; the media and police enforcement campaigns; drivers' characteristics and accident types; and causes and locations of traffic accidents. 190 pp.

CounterAttack Traffic Research Papers, 1984, Ministry of Attorney General, British Columbia, 1985.

This is a collection of eighteen research papers on traffic-related issues completed by the CounterAttack Program during 1984. Topics covered include: the CounterAttack Program history and evaluation; a discussion of the measurement of "alcohol involvement"; public opinion and knowledge of drinking-driving; the relationship between drivers's age and the causes of traffic accidents; the characteristics of victims of traffic accidents such as age, gender, and position in vehicle; the locations and causes of traffic accidents; the success of roadcheck enforcement "blitzes"; and epidemiological studies of restraint device use and vehicle occupant age. 207 pp.

Alcohol-Related Casualty Traffic Accidents in British Columbia, Ministry of Attorney General, British Columbia, 1984.

This document is a collection of studies which examined the characteristics of alcohol-related casualty traffic accidents in terms of their costs, causes, trends, locations, circumstances, and driver age and experience. 116 pp.

Driving While Impaired: Drivers, Charges and Outcomes, Ministry of Attorney General, British Columbia, 1983.

This study examined the court and driving records of 1,531 drivers charged with Driving While Impaired under the Canadian Criminal Code. These drivers were examined in terms of their demographic characteristics, past driving histories, method of apprehension, Blood Alcohol Content (BAC) at the time of arrest, and the outcome of their court appearances. In addition, their demographic and BAC characteristics were compared to those of a representative sample of drivers in British Columbia in order to assess any differences between those persons driving while impaired and those apprehended for same. 49 pp.

The Characteristics of Night-Time Drivers in British Columbia, Ministry of Attorney General, British Columbia, 1982.

This study examined the demographic characteristics, seat belt use and Blood Alcohol Content (BAC) of a representative sample of night-time drivers in B.C. 54 pp.

These publications are available by writing:

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Consumer Services

February, 1989

FOREWORD

This document is a collection of selected papers produced by the CounterAttack Program, most of which have been previously distributed on a limited basis. They have been selected for inclusion not only because they represent the sort of work done by CounterAttack research, but also because they address topics which have been of general interest not only to traffic safety researchers, but also to the police, policy makers, and the public. While each paper is complete unto itself, they have been organized into the following broad categories:

TRAFFIC ACCIDENT TYPES

DRIVER CHARACTERISTICS

PUBLIC ATTITUDES, KNOWLEDGE AND BEHAVIOURS REGARDING DRINKING DRIVING

TRAFFIC EPIDEMIOLOGY

THE COUNTERATTACK PROGRAM

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EXECUTIVE SUMMARY

TRAFFIC ACCIDENT TYPES

Alcohol-Related Casualty Traffic Accidents: Trends, Characteristics, Persons Involved, and Consequences British Columbia, 1987.

In British Columbia between 1977 and 1987 the proportions of traffic accidents causing injury and/or death that had alcohol indicated as the primary cause by the police accident investigation report decreased from 19.3% to 10.4% - almost a 50% reduction. Nonetheless, in B.C. in 1987 alcohol was a cause in 3,815 casualty-producing traffic accidents involving 5,357 vehicles and 9,247 persons. Two hundred and thirty-one of these persons were killed and 5,736 were injured. That represented 37.1% of all reported traffic deaths and 13.9% of all reported traffic injuries. To put these figures in perspective, if the 1987 rate of alcohol-related accidents remains stable, about one in seven British Columbians will be killed or injured in a drinking driving accident some time in their lives.

Typically, alcohol-related casualty traffic accidents were most frequent in the Spring and Summer and least frequent in the December-January period. They tended to occur near the end of the week (ie: Friday, Saturday) and at night (ie: 8 p.m. - 4 a.m.). Rural areas reported a higher percentage of these accidents, while municipal areas reported a lower percentage but higher number.

Regarding the nature of typical drinking driving accidents, they tended to involve only one vehicle (57%) and occurred in good weather on flat, dry roads between intersections. While the majority of these accidents occurred on straight portions of the roadway, when compared to non-alcohol-related casualty accidents a higher proportion occurred at a curve (34% vs. 20%) and involved the vehicle running off of the road (32% vs. 14%). In addition to alcohol, driving without due care (46%) and speeding (29%) were cited as causal factors in these alcohol-related accidents.

Turning to the persons involved in alcohol-related casualty traffic accidents, 76% of the drinking drivers were male. The average drinking driver was 29 years of age, although the age group with the highest frequency of drinking driving accidents was the 21-25 year old age group, followed by the 16-20 year old group.

In about 45% of the accidents the drinking driver carried passengers. Male drinking drivers tended to carry more male passengers than did female drinking drivers (35% vs. 32%), while female drinking drivers tended to carry more female passengers than did male drinking drivers (24% vs. 16%). The average number of passengers when there were passengers in the vehicle was 1.6 (ie: more likely to be more than one passenger).

Overall, a lower proportion of occupants in the drinking drivers' vehicles in alcohol-related accidents reported seat belt use than did those in sober drivers' vehicles in non-alcohol-related accidents (60% vs. 92%). This lower restraint device use rate, combined with the greater speed and vehicle damage severity of alcohol-related crashes probably contributed to the generally more severe injuries experienced in these accidents, with 56% of the injuries to the head area.

Whiplash-Producing Casualty Traffic Accidents: Trends, Characteristics, Persons Involved, and Consequences British Columbia, 1987.

In 1987 in British Columbia 22.3% of all reported casualty traffic accidents involved one or more whiplash injuries, representing a 33.5% increase over the previous year, while 19.7% of all reported casualties involved whiplash, representing a 52.7% increase over the previous year. The increase in these accidents followed no identifiable seasonal variations and might be attributed to changing police and/or public reporting tendencies as well as to an actual increase in the frequency of whiplash injuries.

Whiplash-producing casualty traffic accidents tended to occur in urban/municipal areas at relatively low speeds during daylight hours when one vehicle struck another vehicle from behind, often at an intersection. The three most frequently cited contributing factors to these accidents were Driving Without Due Care (31%), Following Too Closely (21%), and Failure to Yield the Right of Way (13%).

On the average, those sustaining whiplash injuries were more likely to be female, and more likely to be older than those persons in traffic accidents who sustained injuries other than whiplash.

Finally, the increasing reported frequency of whiplash-producing traffic accidents warrants further research in order to identify the causes of this increase.

DRIVER CHARACTERISTICS

Traffic Accidents and Convictions: Group Totals versus Rate per Kilometer Driven.

Using group totals, young drivers, male drivers, and especially young male drivers are substantially over-represented in terms of both traffic accidents and traffic-related convictions. On the other hand, when accidents and convictions are considered in terms of their rates while the person is actually driving, older drivers and female gain in importance, with the female drivers' traffic accident rate and rates for some

convictions exceeding the male drivers' rates. Similarly, the older drivers' accident rate and rates on some convictions exceeded the younger drivers' rates when considered in terms of driving exposure. In addition, these findings lead one to speculate that recent driving exposure more than driver age is the central factor in traffic accident involvement. The implications for policy makers and educators are clear. Although young male drivers are undeniably a legitimate focus for traffic accident countermeasures, they should not be targeted at the expense of drivers who drive less but have as high or higher accident rates-female and older drivers.

Convicted Drinking Drivers: Impaired Or Problem Drivers?

In sum, the results of these analyses suggest that the situation is one of the impaired problem driver as opposed to the impaired driver problem. That is, when compared to drivers who have not been convicted of driving while impaired, those convicted of DWI have had almost three times as many other driving-related convictions and over twice the number of reported traffic accidents. On the whole, convicted drinking drivers appear to be relatively dangerous drivers who also consume alcohol. From this it follows that drinking driving countermeasures might best be associated with a broad spectrum of driver training and education that includes, but is not limited to, information on alcohol.

PUBLIC ATTITUDES, KNOWLEDGE AND BEHAVIOURS REGARDING DRINKING DRIVING

A Summary of the Findings of: A Survey of B.C. Population Attitudes, Knowledge and Behavious Regarding Drinking Driving

1. The sample as a whole considered drinking and driving to be a relatively serious problem in comparison to smoking, drug use, family violence, juvenile deliquency, pornography, racism, unemployment and AIDS. The majority felt that drinking and driving was as important or more important than any of these eight issues.
2. When asked if they agreed or disagreed with a list of things that could be done to reduce drinking and driving, a majority of the sample agreed with all the items on the list. The items attaining the highest percentage of agreement were, in order, including drinking and driving information in driver education, implementing more educational programs with regard to drinking and driving, having bars and taverns set up designated driver programs, having police set up more roadblocks, enforcing existing laws more strictly and establishing more treatment services for problem drinkers. Over 80% of the sample agreed or strongly agreed with all of these strategies.

3. When asked what the maximum legal penalties should be for a first time drinking and driving conviction, over three-quarters of the sample named a penalty that was in line with or was less severe than current British Columbia maximum legal penalties. Only 5.1% named penalties that were more severe than the actual maximum legal penalties.
However, for a first time conviction in which serious injury or death is involved, the sample named much harsher penalties than those named for a first time conviction involving no injuries or death. While over half thought that license suspension was still an appropriate penalty, most of those respondents thought the suspension should be for 3 years or more. Nearly one-quarter of the sample felt the driver should be given a jail sentence with 9.3% recommending sentences of 3 years or more.
4. While CounterAttack was the second most frequently named group or organization campaigning against drinking and driving (13.1%), it still falls far behind MADD, which was named by 53.5% of the sample.
5. When asked about the liklihood of certain consequences happening to a drinking driver, the respondents felt the driver was more likely to have an accident than to be pulled over by the police. On a scale of 0 to 10, where 0 means no chance of the event happening and 10 means it's certain to happen, the sample gave an average rating of only 3.02 for a drinking driver's chances of being pulled over by the police. Further, those respondents who had reported driving after drinking during the past month rated the chances even lower,at 2.64 as did passengers of drinking drivers who gave an average rating of 2.63.
6. The respondents were asked if they had done anything in the past month to avoid drinking and driving. Of the 97 respondents, who said they had done something to avoid drinking and driving, the most frequently given reason for so doing was that they felt it was wrong to drive while impaired (27.8%). This was true for drinking drivers and passengers of drinking drivers as well as the general population. The second most frequently given reason was fear of being in an accident (25.8%). Only 16.5% of the respondents who had done something to avoid drinking and driving gave fear of being caught by the police as a response. However, of the drinking drivers who had done something to avoid drinking and driving, fear of being caught by the police was the second most frequently given reason (22.6%).
7. 18.2% of the sample said that, within the past month, they had been a passenger in a vehicle in which the driver had been drinking. An analysis of the demographic characteristics of this group showed that passengers of drinking drivers tended to be younger than those who had not been passengers of drinking drivers. Sixty-three percent were under 36 years old compared to 37% of those who had not been passengers. A greater percentage of passengers were single (42.7% compared to 22.9% of those who had not been passengers) and currently working at a job or a business (82.7% compared to 62.0%). There was also a signigicant difference between passengers of drinking drivers and those who had not been passengers of drinking drivers with regard to

income. Passengers were less likely to report a total household income of under $20,000 (11.9% compared to 27.6%) and more likely to report an income of over $60,000 (19.4% compared to 9.0%).

8. All respondents who said they had driven within the past month (N=368) were asked if, during the past month, they had been in a situation in which they had to drive after having more than two drinks. 15.7% said they had been in such a situation. The respondents who said they had driven after drinking were asked where they had been drinking, who they were drinking with, and what they were drinking. 44.0% said they were drinking in a bar, 39.2% said they were drinking with friends of both sexes and 68.0% said they were drinking beer. These results suggest a typical profile of a drinking and driving situation involves drinking beer with friends of both sexes in a bar.

Drinking drivers tended to be younger than drivers who did not drink and drive. Sixty-two percent of the drinking drivers were under 36 years of age compared to 38.2% of the drivers who did not drink and drive. Drinking drivers were also more likely to be male (67.2% compared to 51.5% of drivers who did not drink and drive).

A much higher proportion of drinking drivers were single (37.9% compared to 22.9% of the drivers who did not drink and drive). They were more likely to be currently employed or working at a attributable to the age difference between drinking and drivers who did not drink and drive as 17.3% of the drivers who did not drink and drive were retired compared to only 3.4% of the drinking drivers.

9. In addition to finding similarities between drinking drivers and passengers of drinking drivers in terms of demographics, the survey also found that there was considerable overlap between the two groups. 48.3% of the drinking drivers said they had been a passenger of a drinking driver during the past month.

TRAFFIC EPIDEMIOLOGY

Contributing Factors to Casualty Motor Vehicle Crashes in British Columbia, 1987.

This is a tabular presentation of some of the primary causes of casualty traffic accidents broken down by police reporting jurisdiction.

The Number of Injuries and Deaths Associated with Alcohol-related Traffic Accidents by Police Jurisdiction. British Columbia, 1987.

This report lists for each police reporting jurisdiction, the number of persons injured and killed in B.C. and the number of those injuries and deaths attributed to alcohol-related traffic accidents.

Types and Locations of Casualty Motor Vehicle Crashes by Police Jurisdiction. British Columbia, 1987.

This is a tabular presentation of the locations of traffic accidents (i.e. intersection, bridge) and the types of traffic accidents (i.e. commercial vehicle, vehicle-pedestrian) broken down by police reporting jurisdiction.

Canadian Criminal Code Traffic Charges by Police Jurisdiction. British Columbia, 1987.

This report deals with the number of persons charged under the Canadian Criminal Code (i.e. total Criminal Code, total Criminal Code Traffic, Criminal Code impaired) in British Columbia in 1987, by police reporting jurisdiction.

THE COUNTERATTACK PROGRAM

CounterAttack Police Roadcheck Statistics. Spring, 1988 and Christmas, 1988.

Tabular presentation of police reported statistics (i.e. number of vehicles checked, charges laid) for both Spring and Christmas roadcheck campaigns.

Drinking Driving Media Coverage, 1988.

A summary of the media coverage dealing with drinking driving and related issues in British Columbia during 1988. Media coverage is monitored to get a picture of how the public, through the media, see the drinking-driving problem.

CounterAttack Research Data Sources: Traffic Accident Report Forms (MV104).

A discussion of the reliability and on validity of police-reported traffic accident data in British Columbia.

APPENDICES

Appendix A: Canadian Criminal Code and British Columbia Motor Vehicle Act Legislation on Drinking Driving.

Text of Canadian Criminal Code sections 253, 254, 255, 256, 257, 258, 259, and 260 and text of B.C. Motor Vehicle Act sections 214, 220, 90, 91, and 92.

Appendix B: Executive Summary of CounterAttack Traffic Research Papers, 1987.

SECTION 1

TRAFFIC ACCIDENT TYPES

Alcohol-Related Casualty Traffic Accidents:
Trends, Characteristics, Persons Involved, and Consequences
British Columbia, 1987.

Whiplash-Producing Casualty Traffic Accidents:
Trends, Characteristics, Persons Involved, and Consequences
British Columbia, 1987.

Alcohol-Related Casualty Traffic Accidents: Trends, Characteristics, Persons Involved, and Consequences British Columbia, 1987.

SUMMARY

In British Columbia between 1977 and 1987 the proportions of traffic accidents causing injury and/or death that had alcohol indicated as the primary cause by the police accident investigation report decreased from 19.3% to 10.4% - almost a 50% reduction. Nonetheless, in B.C. in 1987 alcohol was a cause in 3,815 casualty-producing traffic accidents involving 5,357 vehicles and 9,247 persons. Two hundred and thirty-one of these persons were killed and 5,736 were injured. That represented 37.1% of all reported traffic deaths and 13.9% of all reported traffic injuries. To put these figures in perspective, if the 1987 rate of alcohol-related accidents remains stable, about one in seven British Columbians will be killed or injured in a drinking driving accident some time in their lives.

Typically, alcohol-related casualty traffic accidents were most frequent in the Spring and Summer and least frequent in the December-January period. They tended to occur near the end of the week (ie: Friday, Saturday) and at night (ie: 8 p.m. - 4 a.m.). Rural areas reported a higher percentage of these accidents, while municipal areas reported a lower percentage but higher number.

Regarding the nature of typical drinking driving accidents, they tended to involve only one vehicle (57%) and occurred in good weather on flat, dry roads between intersections. While the majority of these accidents occurred on straight portions of the roadway, when compared to non-alcohol-related casualty accidents a higher proportion occurred at a curve (34% vs. 20%) and involved the vehicle running off of the road (32% vs. 14%). In addition to alcohol, driving without due care (46%) and speeding (29%) were cited as causal factors in these alcohol-related accidents.

Turning to the persons involved in alcohol-related casualty traffic accidents, 76% of the drinking drivers were male. The average drinking driver was 29 years of age, although the age group with the highest frequency of drinking driving accidents was the 21-25 year old age group, followed by the 16-20 year old group.

In about 45% of the accidents the drinking driver carried passengers. Male drinking drivers tended to carry more male passengers than did female drinking drivers (35% vs. 32%), while female drinking drivers tended to carry more female passengers than did male drinking drivers (24% vs. 16%). The average passenger was 21 years of age, and the average number of passengers when there were passengers in the vehicle was 1.6 (ie: more likely to be more than one passenger).

Overall, a lower proportion of occupants in the drinking drivers' vehicles in alcohol-related accidents reported seat belt use than did those in sober drivers' vehicles in non-alcohol-related accidents (60% vs. 92%). This lower restraint device use rate, combined with the greater speed and vehicle damage severity of alcohol-related crashes probably contributed to the generally more severe injuries experienced in these accidents, with 56% of the injuries to the head area.

METHOD

In order to examine trends in alcohol-related motor vehicle casualty accidents (ie. an accident where one or more persons were injured or killed), police Traffic Accident Reports (MV104) were examined from 1977 and 1987, while a detailed analysis of those accidents was drawn from the 1987 MV104 casualty acccident reports. As the raw data from these police reports are managed by the Motor Vehicle Department of the Ministry of Solicitor General, and as that Department is constantly improving their data base, any statistics produced by that Department that contradict those reported herein ought to be considered as the more accurate.

RESULTS

Trends and Patterns

Table 1 and Figures 1 through 3 are based upon the police investigation team's assessment that alcohol was the single primary cause of the casualty-producing traffic incident. These data show that as the total number of casualty traffic accidents increases and decreases, the total number of alcohol-related casualty traffic accidents also tends to increase and decrease. However, in addition there has been a gradual decline since 1977 in the percentage of casualty accidents having alcohol as the primary causal factor, although this decline appears to have levelled out between 1985-87.

Seasonally, both the number and percentage of alcohol-related casualty accidents has been lowest in the December-January period and highest in the May-July period, as is illustrated by Table 2. It should be noted that Table 2 was calculated on the basis of 1987 data as described below.

CASUALTY ACCIDENT CHARACTERISTICS

The remaining analyses are based on data for casualty accidents occurring in British Columbia in 1987. Unless stated otherwise, an accident was classified as alcohol-related if alcohol was considered as a cause at any level by the investigating police. That is, if the police indicated that alcohol was a primary, secondary or tertiary cause for any driver, the accident was classified as alcohol-related. It should be noted that "primary causal factor" was used in the trend analyses because this level of judgement is less likely to

Table 1
Alcohol-related Casualty Accidents
British Columbia, 1977-1987.

YEAR	TOTAL # CASUALTY TRAFFIC ACCIDENTS	TOTAL # ALCOHOL-RELATED **	# ACCIDENTS WHERE CONTR. FACTOR UNKNOWN	% ALC.-RELATED OF ACCIDENTS WHERE CONTR. FACTOR KNOWN
1977	22,926	3,395	5,350	19.3%
1978	23,487	3,355	3,327	16.6%
1979	26,751	3,693	884	14.3%
1980	29,268	4,173	843	14.7%
1981	31,455	4,709	737	15.3%
1982	24,262	3,528	814	15.0%
1983	23,089	3,156	463	13.9%
1984	23,440	2,694	1,828	12.5%
1985	25,155	2,443	3,240	11.1%
1986	29,138	2,789	2,465	10.5%
1987	29,738	2,844	2,477	10.4%

** Note: Alcohol was the primary cause

Table 2
Alcohol-related Accident Percentages by Month
British Columbia, 1987.

Alcohol Accident	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
No N=25,923	7.9%	6.6%	7.4%	7.7%	8.6%	8.5%	9.1%	9.1%	8.4%	8.9%	8.6%	9.4%
Yes N=3,815	7.2%	5.9%	6.9%	7.7%	10.1%	8.6%	9.4%	10.1%	8.4%	9.5%	9.0%	7.3%

Figure 1.
% Alcohol-Related Casualty Accidents:

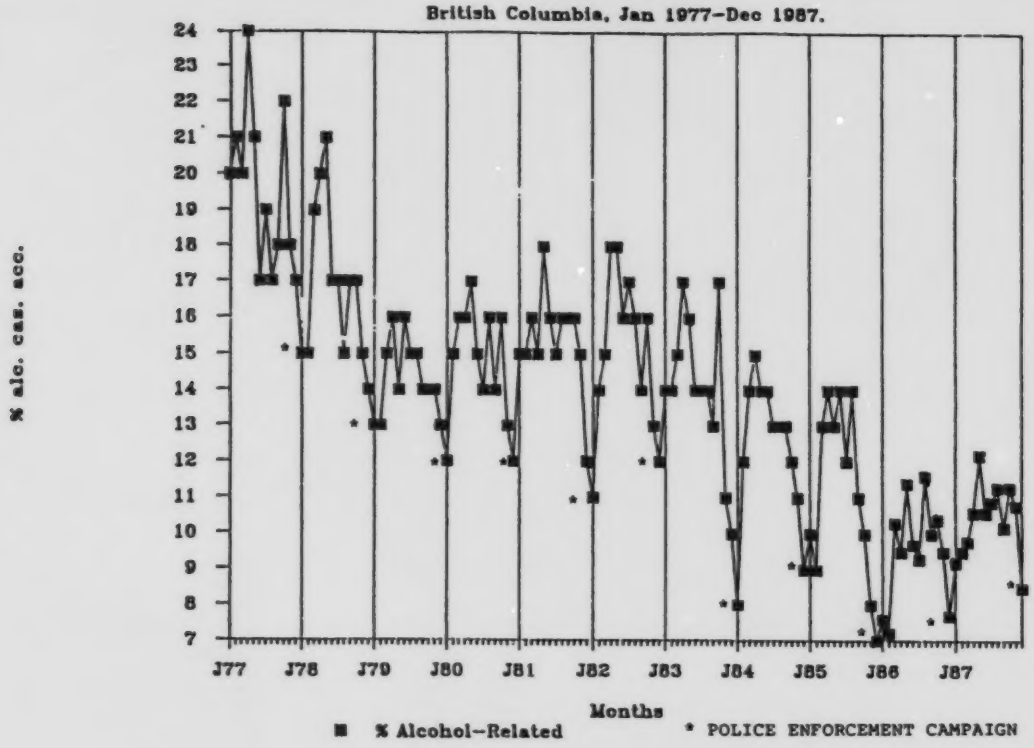


Figure 2.
Alcohol-Related Casualty Accidents

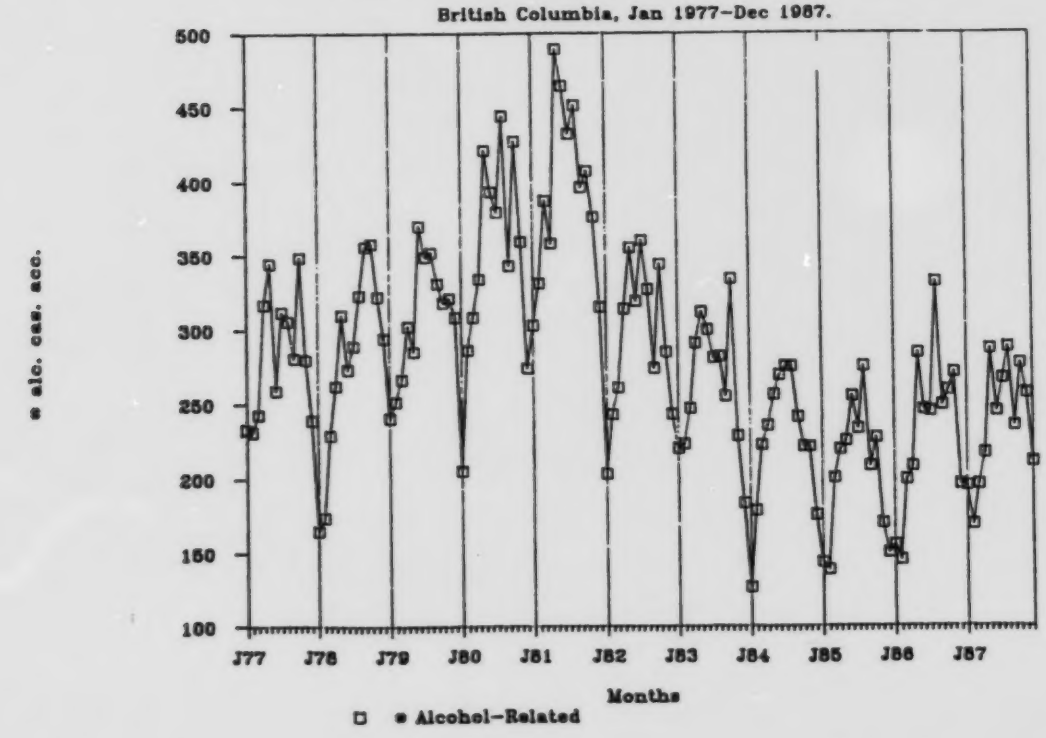


Figure 3.
Casualty-Producing Traffic Accidents:

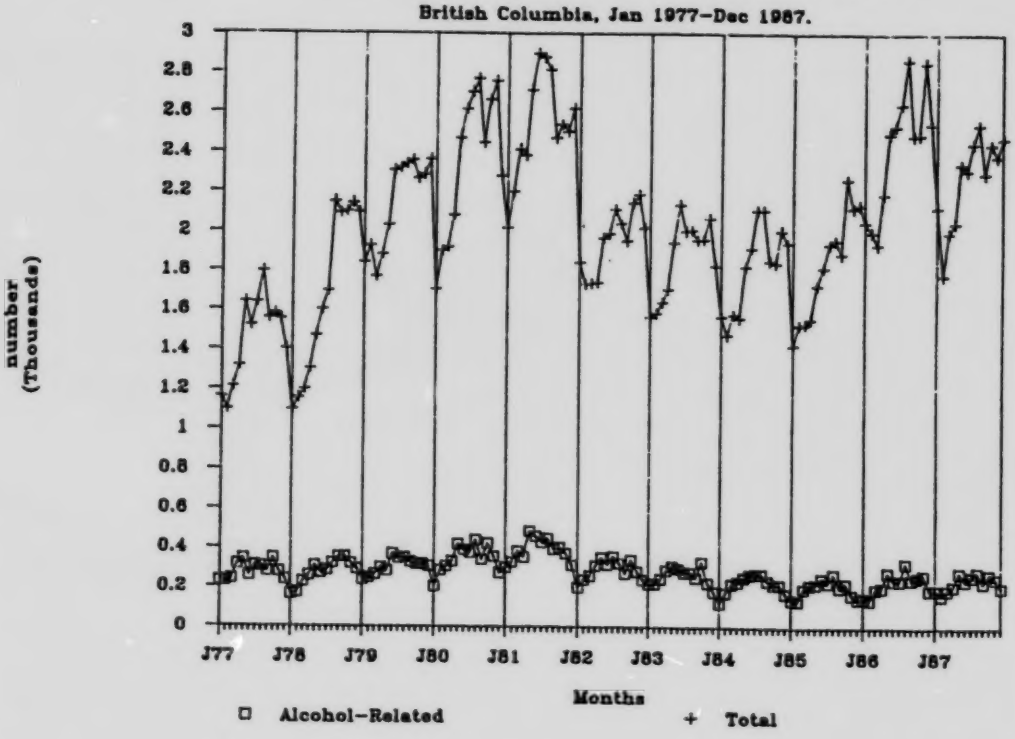


Table 3
Day of Week of Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	DAY OF WEEK						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
No N=25,923	13.9%	14.5%	13.6%	14.5%	17.2%	14.9%	11.3%
Yes N=3,815	6.9%	8.9%	9.5%	11.9%	16.0%	26.6%	20.3%
B.C. Total N=29,838	13.0%	13.6%	13.1%	14.2%	17.1%	16.4%	12.6%

be affected by changes from year to year in accident report form utilization and configuration.

Time, Location and Conditions

Tables 3 to 5 show that alcohol-related casualty traffic accidents tended to occur more often later in the week and in the evening and night periods than did non-alcohol-related casualty accidents. For example, 63% of alcohol-related and only 43% of non-alcohol-related casualty accidents occurred Friday through Sunday inclusive, while 63% of alcohol-related and only 17% of non-alcohol-related casualty accidents occurred between 8 p.m. and 4 a.m.

Table 6 shows that the Lower Mainland and Municipal areas had a smaller proportion of alcohol-related casualty accidents to non-alcohol-related casualty accidents than did more rural areas, and this is reflected in Tables 7 through 10. For example, 27% of alcohol-related and 20% of non-alcohol-related accidents occurred in agriculatural land use areas; 54% of alcohol-related and 38% of non-alcohol-related accidents occurred between intersections; and 78% of alcohol-related and 64% of non-alcohol-related accidents occurred where there were no traffic control devices.

However, it must be emphasized that a greater number of alcohol-related accidents occurred in municipal as opposed to rural areas. To illustrate, while only 11.3% of the casualty accidents in the RCMP Lower Mainland municipal patrol area were alcohol-related and 16.1% of the casualty accidents in the RCMP Lower Mainland rural patrol area were alcohol-related, 11.3% of

Table 4
Time of day of Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	TIME OF DAY (two hour intervals)											
	Midnight 2:00 AM	2:00 AM 4:00 AM	4:00 AM 6:00 AM	6:00 AM 8:00 AM	8:00 AM 10:00 AM	10:00 AM NOON	NOON 2:00PM	2:00 PM 4:00 PM	4:00 PM 6:00 PM	6:00 PM 8:00 PM	8:00 PM 10:00 PM	10:00 PM Midnight
No N=25,518	3.4%	2.4%	1.3%	5.2%	8.4%	9.8%	12.7%	16.0%	17.7%	11.3%	6.6%	4.8%
Yes N=3,745	18.8%	15.9%	5.3%	2.8%	1.7%	1.3%	2.5%	3.7%	8.4%	11.6%	12.8%	15.2%
B.C. Total N=29,263	5.4%	4.2%	1.9%	4.9%	7.6%	8.7%	11.4%	14.5%	16.5%	11.3%	7.6%	6.1%

Table 5
Light Conditions During Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	LIGHT CONDITION					
	Day-Light	Dawn	Dusk	Night/Full Illumination	Night/Some Illumination	Night/No Illumination
No N=25,729	69.5%	1.6%	3.9%	6.5%	10.9%	7.6%
Yes N=3,795	23.2%	2.7%	3.3%	15.2%	31.6%	24.1%
B.C. Total N=29,524	63.6%	1.7%	3.8%	7.6%	9.7%	13.6%

Table 6
Percentage of Alcohol-related Accidents by Police Subdivision
British Columbia, 1987.

LOCATION	Total # of Casualty Accidents	% Non-Alcohol Accidents	% Alcohol Accidents
Courtenay Municipal	514	85.4%	14.6%
Courtenay Rural	834	78.8%	21.2%
Kamloops Municipal	769	83.1%	16.9%
Kamloops Rural	955	82.6%	17.4%
Kelowna Municipal	1,195	89.0%	11.0%
Kelowna Rural	1,118	79.9%	20.1%
Nelson Municipal	170	85.9%	14.1%
Nelson Rural	905	83.8%	16.2%
Prince George Municipal	746	81.9%	18.1%
Prince George Rural	859	82.5%	17.5%
Prince Rupert Municipal	171	79.5%	20.5%
Prince Rupert Rural	467	72.2%	27.8%
Victoria Municipal	792	85.2%	14.8%
Victoria Rural	917	81.6%	18.4%
R.C.M.P. Lower Mainland			
Municipal	8,708	88.7%	11.3%
Rural	939	83.9%	16.1%
R.C.M.P. Freeway Patrol	777	88.9%	11.2%
Nelson Area Independents	39	89.7%	10.3%
Vancouver Area Independents	7,047	91.7%	8.3%
Victoria Area Independents	1,806	89.3%	10.7%
Other Police	9	88.9%	11.1
British Columbia Total	29,737	87.2%	12.8%

Table 7
Land Use at Casualty Accidents involving Alcohol
British Columbia 1987.

Alcohol Accident	LAND USE						
	School/ Playgrnd	Family Res.	Apart-ment	Business/ Shopping	Indus-trial	Agricul-tural	Recreation Camp/Park
No	2.7%	28.0%	6.2%	33.8%	6.7%	20.0%	2.6%
Yes	1.5%	31.1%	5.9%	25.2%	5.9%	27.3%	3.0%
B.C. Total	2.5%	28.4%	6.2%	32.7%	6.6%	20.9%	2.7%

Table 8
Locations of Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	ACCIDENT LOCATIONS				
	Inter-section	Between intersections	"T" Junction	Bridge	Other
No	47.7%	38.3%	7.1%	2.0%	4.9%
Yes	32.0%	54.4%	5.2%	2.3%	6.1%
B.C. Total	45.7%	40.4%	6.9%	2.1%	5.0%

Table 9
Traffic Control Device at Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	TYPE OF TRAFFIC CONTROL						
	None	Stop Sign	Yield Sign	Signal Red	Signal Amber	Signal Green	Other
No	64.2%	14.5%	1.9%	8.2%	2.2%	6.5%	1.1%
Yes	78.3%	8.8%	1.1%	7.0%	0.8%	3.8%	0.8%
B.C. Total	66.0%	13.8%	1.8%	8.0%	2.0%	7.4%	1.1%

Table 10
Speed Zones of Casualty Accidents involving Alcohol
British Columbia 1987.

Alcohol Accident	SPEED ZONE						
	0-40 kph	50 kph	60 kph	70 kph	80 kph	90 kph	100 kph
No	4.1%	53.2%	11.3%	1.9%	8.6%	5.5%	15.3%
Yes	4.0%	50.0%	14.0%	2.7%	12.4%	6.8%	10.1%
B.C. Total	4.2%	52.8%	11.7%	2.0%	9.1%	5.7%	14.7%

8,708 accidents is a larger number than 16.1% of 939 accidents (i.e. 984 vs. 151).

Turning to weather and road surface conditions, as illustrated in Tables 11 and 12, both alcohol-related and non-alcohol-related accidents tended to occur in approximately equal proportions across all weather and road surface conditions, with clear weather and dry conditions being most common for both. Similarly, both sorts of accidents appear to have occurred in similar proportions across road grades, with the majority of both having happened on flat road with no hill or grade, as shown in Table 13. On the other hand, Table 14 shows that, while the majority of alcohol-related (66%) and non-alcohol-related (80%) accidents occurred on straight roads, a higher proportion of alcohol-related (34%) than non-alcohol-related (20%) occurred on portions of road containing one or more curves.

Vehicles:

Alcohol-related casualty traffic accidents were more likely than non-alcohol-related casualty traffic accidents to: involve only one vehicle (56.9% vs. 28.6%) and to be hit-and-run (8.5% vs. 3.9%), but were less likely to involve commercial vehicles (2.7% vs. 4.9%) or bicycles (1.7% vs. 8.4%). On the other hand, alcohol-related and non-alcohol-related casualty accidents had about the same proportion of out-of-province driver accidents (7.1% vs. 8.4%) and motorcycle accidents (6.4% vs 7.0%). Finally these alcohol-related accidents were about as likely as non-alcohol-related accidents to involve pedestrians (7.6% vs 7.9%).

Table 11
Weather Conditions During Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	WEATHER CONDITION				
	Clear	Cloudy	Raining	Snow/ Sleet	Other
No	53.5%	26.2%	17.0%	2.3%	0.8%
Yes	54.4%	29.1%	14.0%	1.1%	1.4%
B.C. Total	53.6%	26.6%	16.7%	2.1%	0.9%

Table 12
Road Surface Characteristics at Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	RUAD SURFACE CONDITION					
	Dry	Wet	Muddy	Snow	Slush	Ice
No	65.9%	27.4%	0.2%	1.9%	0.9%	3.7%
Yes	69.3%	26.7%	0.1%	1.4%	0.5%	2.0%
B.C. Total	66.4%	27.3%	0.2%	1.8%	0.9%	3.5%

Table 13
Vertical Road Surface Characteristics at
Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	VERTICAL ROAD CHARACTERISTICS		
	Flat	Some Grade	Steep Grade
No	66.2%	28.9%	4.9%
Yes	63.1%	32.4%	4.4%
B.C. Total	65.8%	29.3%	4.9%

Table 14
Horizontal Road Surface Characteristics at
Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	HORIZONTAL ROAD CHARACTERISTICS				
	Straight	Curve	Sharp Curve	Switch-back	Winding Curves
No	79.8%	12.8%	4.8%	0.5%	2.0%
Yes	65.9%	21.6%	8.5%	0.8%	3.3%
B.C. Total	77.9%	14.0%	5.3%	0.6%	2.2%

Table 15
Pre-collision Action of Vehicles in Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	PRE-COLLISION ACTION													
	Going straight	Right turn	Left turn	Slow/ Stop	Stop in Traffic	Start in Traffic	Park/ legal	Change lanes	Over-taking	Back-ing	Skid	Swerve	Yaw	Other
No N=43,556	56.8%	3.8%	12.2%	5.2%	9.1%	1.1%	1.4%	1.5%	1.0%	1.0%	3.0%	1.2%	0.5%	2.3%
Yes N=5,357	63.0%	3.0%	7.8%	2.1%	4.0%	0.5%	4.6%	1.0%	1.6%	0.8%	4.5%	3.0%	2.2%	2.6%
B.C. Total N=48,913	57.5%	3.7%	11.7%	4.8%	8.5%	1.0%	1.7%	1.4%	1.0%	1.0%	3.2%	1.4%	0.7%	2.1%

Table 16
Motor Vehicle Manoeuver at Point of Impact in Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	VEHICLE MANOEUVER									
	Rear End	Head On	Side Swipe	Inter-secting at 90°	Over-taking	Right turn	Left turn	Run off road to right	Run off road to left	Other
No N=17,795	37.7%	4.8%	3.5%	11.5%	14.4%	3.4%	5.9%	8.5%	5.6%	1.0%
Yes N=2,404	23.4%	9.1%	4.5%	6.0%	14.7%	4.2%	2.5%	19.9%	12.0%	3.6%
B.C. Total N=20,199	36.0%	5.3%	3.6%	10.8%	14.4%	3.5%	5.6%	9.8%	6.4%	4.5%

Pre-collision and Collision Events:

From Table 15 it can be seen that for the majority of alcohol-related and non-alcohol-related casualty accidents, the vehicles involved were going straight ahead (63% vs. 57%) or making a left turn (8% vs. 12%), with a slightly higher proportion of alcohol-related accidents involving no turns. Table 16 shows that the most typical vehicle manoeuvers at the time of impact in alcohol-related casualty accidents were running off the road to the right or left (32%) while the most typical for non-alcohol-related was striking or being struck from the rear (38%). However, rear-end (23%), overtaking (15%) and head-on (9%) points of impact were also common for vehicles in alcohol-related accidents.

Post-collision and Contributing Factors:

Alcohol-related casualty traffic accidents tended to produce a higher level of damage to the vehicles involved than did non-alcohol-related accidents, as can be seen from Table 17, and this is reflected by the frequent association of speed with these accidents (29%) as shown in Table 18. The three most commonly cited contributing factors for non-alcohol-related casualty accidents were "driving without due care" (27%), "failure to yield right of way" (19%), and "unsafe speed" (13%) while for alcohol-related accidents they were "alcohol" (100%), "driving without due care" (46%), and "unsafe speed" (30%). (It should be noted that, as each driver can be allocated up to three contributing factors, the total percentages of these factors can add to more than 100%).

Table 17
Damage Severity to Vehicles in Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	DAMAGE SEVERITY				
	No Damage	Light Damage	Moderate Damage	Severe Damage	Demolished
No N=39,097	10.6%	28.3%	30.7%	20.2%	10.8%
Yes N=5,236	4.8%	14.1%	25.5%	27.5%	28.1%
B.C. Total N=44,333	9.9%	35.6%	30.1%	21.1%	12.3%

Table 18
Contributing Factors to Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	CONTRIBUTING FACTORS						
	% Driving w/o Due Care	% Alcohol Related	% Driving at Unsafe Speed	% Fail to Yield	% Due to Weather	% Following too Closely	% Vehicle Fault
No	26.5%	0.0%	13.2%	18.5%	8.8%	9.3%	3.7%
Yes	46.3%	100.0%	28.9%	6.0%	3.5%	2.9%	3.1%
B.C. Total	29.0%	12.8%	15.2%	16.9%	8.1%	8.4%	3.6%

PERSONS INVOLVED

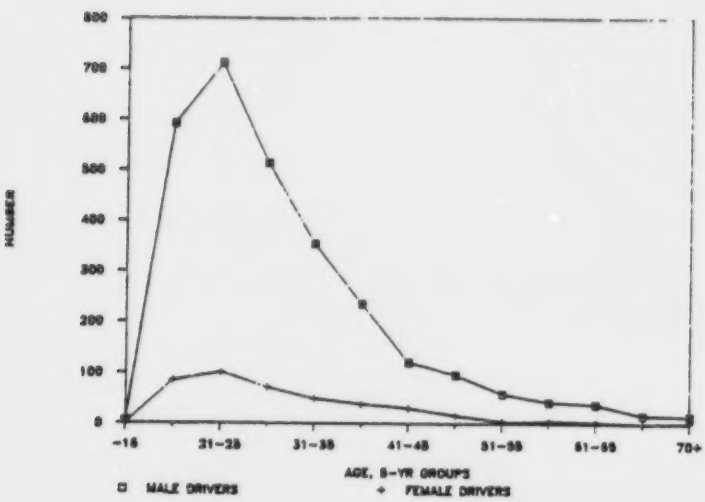
In this section and in Table 19 the unit of analysis is the driver and his/her vehicle. A driver was classified as a drinking driver if any one of the three contributing factors associated with that driver was alcohol. Sober driver data were drawn from accidents where no driver had alcohol as a contributing factor. Due to computer limitations, drivers who did not have alcohol as a contributing factor but who were in an alcohol-related accident were not included in the sober driver data, and represent a loss of no more than 1,966 (4%) of a possible total of 49,510 sober drivers from the analyses of sober driver characteristics.

Comparing drinking drivers in alcohol-related casualty traffic accidents to sober drivers in non-alcohol-related casualty traffic accidents, it can be seen from Table 19 that drinking drivers were: more likely to be male (87.3% vs. 67.2%); on an average younger (29.3% years vs. 34.3 years); carried passengers more frequently (45.1% vs. 34.7%); carried more passengers when they did carry passengers (average 1.57 passengers vs. 1.49 passengers); carried younger passengers (21.1 years vs. 23.8 years); were more likely to carry male passengers (35.2% vs. 17.8%); were less likely to carry female passengers (17.2% vs. 21.8%); and were less likely to have the vehicle occupants using restraint devices (59.5% vs. 92.2%). While the passengers of both drinking and sober drivers tended to be younger than the drivers, this was more apparent for sober than for drinking drivers.

Table 19
Persons Involved in Casualty Traffic Accidents
British Columbia, 1977-1987.

VARIABLE	OVERALL		MALE DRIVERS		FEMALE DRIVERS	
	DRINKING DRIVER N=3,204	SOBER DRIVER N=43,250	DRINKING DRIVER N=1,296	SOBER DRIVER N=29,071	DRINKING DRIVER N= 408	SOBER DRIVER N=14,179
Average Driver's Age (Years)	29.30	34.30	29.30	34.00	29.40	34.80
Average # Passengers	0.71	0.52	0.69	0.52	0.80	0.51
Average # Male Passengers	0.48	0.23	0.48	0.24	0.48	0.21
Average # Female Passengers	0.23	0.28	0.21	0.27	0.32	0.29
Average Passengers Age (Years)	21.10	23.80	20.90	25.10	22.40	20.90
Average Male Passengers Age (Years)	21.50	20.90	21.10	21.00	24.00	20.60
Average Female Passengers Age (Years)	21.00	26.90	21.20	29.50	20.20	21.90
% Vehicles with Passengers	45.1%	34.7%	44.5%	34.9%	49.1%	34.5%
% Vehicles with Male Passengers	35.2%	17.8%	34.9%	18.2%	32.4%	17.1%
% Vehicles with Female Passengers	17.2%	21.8%	16.2%	21.3%	24.2%	22.6%
% Restraint Device Use	59.5%	92.2%	59.7%	90.9%	58.5%	94.6%
# Passengers where there are Passengers	1.57	1.49	1.56	1.49	1.63	1.49

Figure 4.
DRINKING DRIVER ACCIDENTS, B.C. 1987



Comparing male and female drinking drivers in alcohol-related casualty accidents, the females tended to be slightly more likely to be carrying passengers (49.1% vs. 44.5%), especially female passengers (24.2% vs. 16.2%), although male passengers were most common for both genders of drivers (37.45 vs. 34.9%).

Turning to Figures 4 and 5, it can be seen that while on the average drinking drivers in casualty traffic accidents were younger than sober drivers in casualty traffic accidents, the most frequent drinking driving accidents occurred in the 21-25 year old driver category while the most frequent sober driver accident occurred in the 16-20 year old driver category for both male and female drivers. That is, the target group for being involved in the most drinking driving is older than the target group for being in the most frequent sober driver accidents. Figure 6 further illustrates this relationship by comparing drinking driver and sober driver ages for those involved in casualty traffic accidents.

PERSONS INJURED

In the 3,815 casualty traffic accidents in B.C. in 1987 where alcohol was considered to be contributing factor at any level for any driver there were 5,736 persons injured (average 1.5 per accident) and 231 persons killed (average 0.06 per accident). In the 25,922 casualty traffic accidents in B.C. in 1987 where alcohol was not considered a contributing factor there were 35,520 persons injured (1.4 average) and 391 persons killed (0.02 averge). That is, 13.9% of those injured and 37.1% of

Figure 5.
SOBER DRIVER ACCIDENTS, B.C. 1987

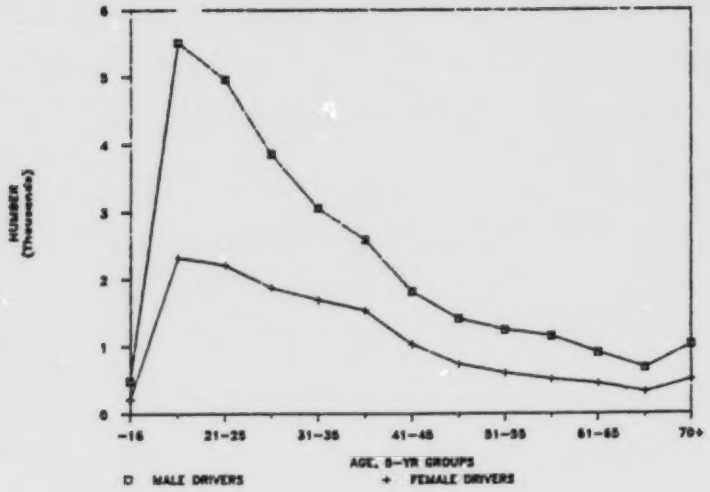
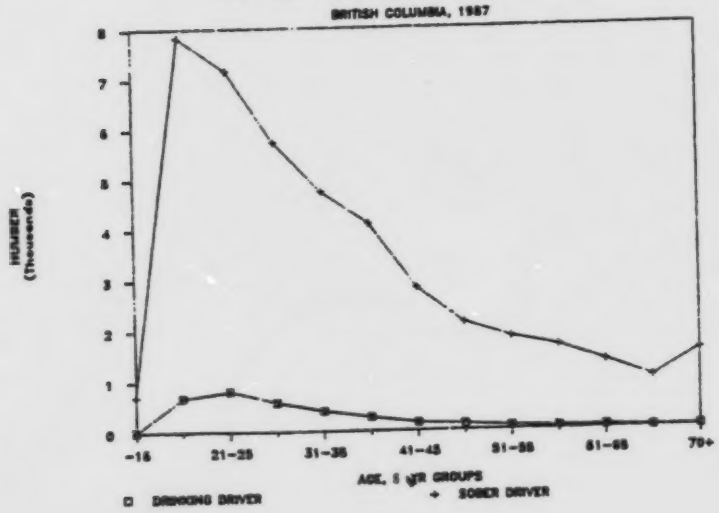


Figure 6.
DRINKING VS. SOBER DRIVER ACCIDENTS,
BRITISH COLUMBIA, 1987



those killed in traffic accidents in B.C. were killed or injured in alcohol-related accidents.

Tables 20 through 22 show the most serious injury location, most serious injury type and state of consciousness of those involved in alcohol-related and non-alcohol-related casualty traffic accidents. These tables illustrate the generally more serious nature of alcohol-related casualty accidents.

Table 20
Victims' Injury Locations
Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	No Injury	Head/ Neck	Chest/ Back	Shoulder/ Arm	Abdomen/ Hip	Lower Leg	All Body
No N=70,087	50.0%	26.2%	7.4%	6.3%	3.1%	5.8%	1.2%
Yes N= 9,247	37.3%	35.2%	8.6%	7.0%	3.4%	6.0%	2.8%

Table 21
Victims' Injury Type:
Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	INJURY TYPE								
	None	Abrasion	Bruise	Laceration	Bleeding	Fracture	Dislocation	Concussion	Whiplash
No N=70,087	52.6%	5.1%	17.7%	4.9%	2.7%	3.2%	1.0%	1.0%	11.5%
Yes N= 9,247	38.5%	6.4%	18.1%	12.3%	7.8%	7.0%	1.2%	1.5%	6.6%

Table 22
Victim's State of Consciousness
Casualty Accidents involving Alcohol
British Columbia, 1987.

Alcohol Accident	STATE OF CONSCIOUSNESS					
	Appears Normal	Agitated	Incoherent	Semi-conscious	Unconscious	Appears Dead
No N=70,087	78.0%	15.6%	1.5%	2.9%	0.8%	1.2%
Yes N= 9,247	60.9%	21.4%	4.9%	6.7%	2.2%	4.0%

SUMMARY AND CONCLUSIONS

In British Columbia between 1977 and 1987 the proportions of traffic accidents causing injury and/or death that had alcohol indicated as the primary cause by the police accident investigation report decreased from 19.3% to 10.4% - almost a 50% reduction. Nonetheless, in B.C. in 1987 alcohol was a cause in 3,815 casualty-producing traffic accidents involving 5,357 vehicles and 9,247 persons. Two hundred and thirty-one of these persons were killed and 5,736 were injured. That represented 37.1% of all reported traffic deaths and 13.9% of all reported traffic injuries. To put these figures in perspective, if the 1987 rate of alcohol-related accidents remains stable, about one in seven British Columbians will be killed or injured in a drinking driving accident some time in their lives.

Typically, alcohol-related casualty traffic accidents were most frequent in the Spring and Summer and least frequent in the December-January period. They tended to occur near the end of the week (ie: Friday, Saturday) and at night (ie: 8 p.m. - 4 a.m.). Rural areas reported a higher percentage of these accidents, while municipal areas reported a lower percentage but higher number.

Regarding the nature of typical drinking driving accidents, they tended to involve only one vehicle (57%) and occurred in good weather on flat, dry roads between intersections. While the majority of these accidents occurred on straight portions of the roadway, when compared to non-alcohol-related casualty accidents a higher proportion occurred at a curve (34% vs. 20%) and

involved the vehicle running off of the road (32% vs. 14%). In addition to alcohol, driving without due care (46%) and speeding (29%) were cited as causal factors in these alcohol-related accidents.

Turning to the persons involved in alcohol-related casualty traffic accidents, 76% of the drinking drivers were male. The average drinking driver was 29 years of age, although the age group with the highest frequency of drinking driving accidents was the 21-25 year old age group, followed by the 16-20 year old group.

In about 45% of the accidents the drinking driver carried passengers. Male drinking drivers tended to carry more male passengers than did female drinking drivers (35% vs. 32%), while female drinking drivers tended to carry more female passengers than did male drinking drivers (24% vs. 16%). The average passenger was 21 years of age, and the average number of passengers when there were passengers in the vehicle was 1.6 (ie: more likely to be more than one passenger).

Overall, a lower proportion of occupants in the drinking drivers' vehicles in alcohol-related accidents reported seat belt use than did those in sober drivers' vehicles in non-alcohol-related accidents (60% vs. 92%). This lower restraint device use rate, combined with the greater speed and vehicle damage severity of alcohol-related crashes probably contributed to the generally more severe injuries experienced in these accidents, with 56% of the injuries to the head area.

**Whiplash-Producing Casualty Traffic Accidents:
Trends, Characteristics, Persons Involved, and Consequences
British Columbia, 1987.**

SUMMARY

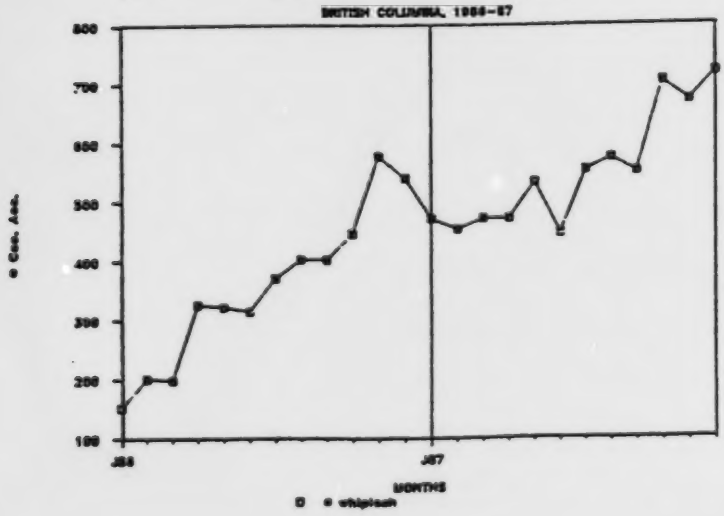
In 1987 in British Columbia 22.3% of all reported casualty traffic accidents involved one or more whiplash injuries, representing a 33.5% increase over the previous year, while 19.7% of all reported casualties involved whiplash, representing a 52.7% increase over the previous year. The increase in these accidents followed no identifiable seasonal variations and might be attributed to changing police and/or public reporting tendencies as well as to an actual increase in the frequency of whiplash injuries.

Whiplash-producing casualty traffic accidents tended to occur in urban/municipal areas at relatively low speeds during daylight hours when one vehicle struck another vehicle from behind, often at an intersection. The three most frequently cited contributing factors to these accidents were Driving Without Due Care (31%), Following Too Closely (21%), and Failure to Yield the Right of Way (13%).

On the average, those sustaining whiplash injuries were more likely to be female, and more likely to be older than those persons in traffic accidents who sustained injuries other than whiplash.

Finally, the increasing reported frequency of whiplash-producing traffic accidents warrants further research in order to identify the causes of this increase.

Figure 1. ■ CAS. ACC. INVOLVING WHIPLASH



METHOD

In order to examine trends in whiplash-producing motor vehicle casualty accidents (ie. an accident where one or more persons were injured or killed), police Traffic Accident Reports (MV104) were examined for 1986 and 1987, while a detailed analysis of those accidents was drawn from the 1987 MV104 casualty accident reports. As the raw data from these police reports are managed by the Motor Vehicle Department of the Ministry of Solicitor General, and as that Department is constantly improving their data base, any statistics produced by that Deparment that contradict those reported herein ought to be considered as the more accurate.

RESULTS

Trends and Patterns:

It is difficult to clearly document the frequency of whiplash-producing casualty traffic accidents as the Traffic Accident Report (MV104) only began to record these injuries as a distinct category in April, 1985, and 1986 marks the first complete calendar year that the police utilized the revised forms to report traffic accidents. Nonetheless, Table 1 and Figures 1 through 3 show a generally linear increase in both the number and percentage of whiplash-producing traffic accidents, with no discernable seasonal variation.

However, it must be noted that it is impossible to tell whether or not these increases have to do with an actual increase in the frequency of whiplash injury, an increase in the police reporting of whiplash injuries due to their becoming more familiar with the new whiplash reporting code, an increase in

Table 1
% Whiplash Casualty Accidents
British Columbia, 1986-1987.

YEAR	TOTAL # CASUALTY TRAFFIC ACCIDENTS	% WHIPLASH	TOTAL # CASUALTIES	% WHIPLASH
1986	25,486	16.7%	40,977	12.9%
1987	29,738	22.3%	41,877	19.7%

Figure 1. # CAS. ACC. INVOLVING WHIPLASH

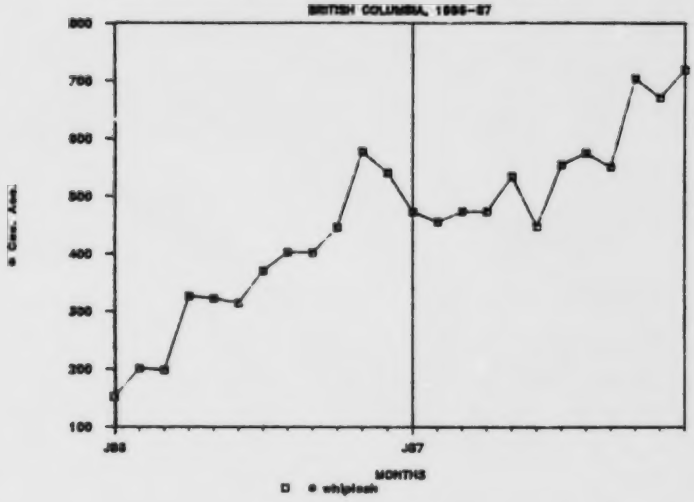


Figure 2. % CAS. ACC. INVOLVING WHIPLASH

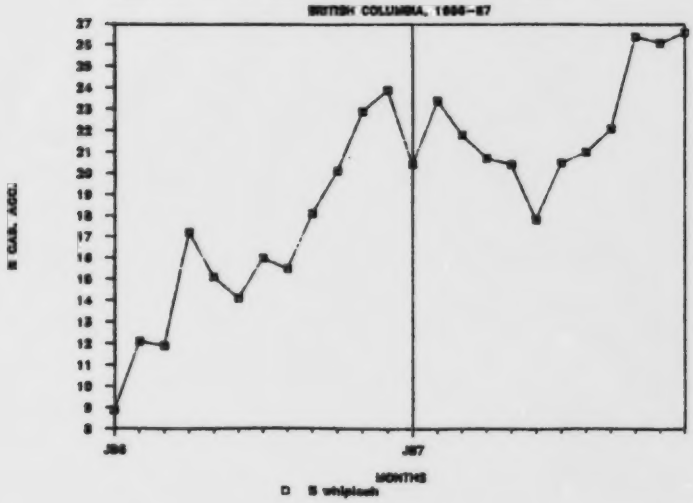


Figure 3. CASUALTY PRODUCING TRAFFIC ACCIDENTS
BRITISH COLUMBIA 1986-1987

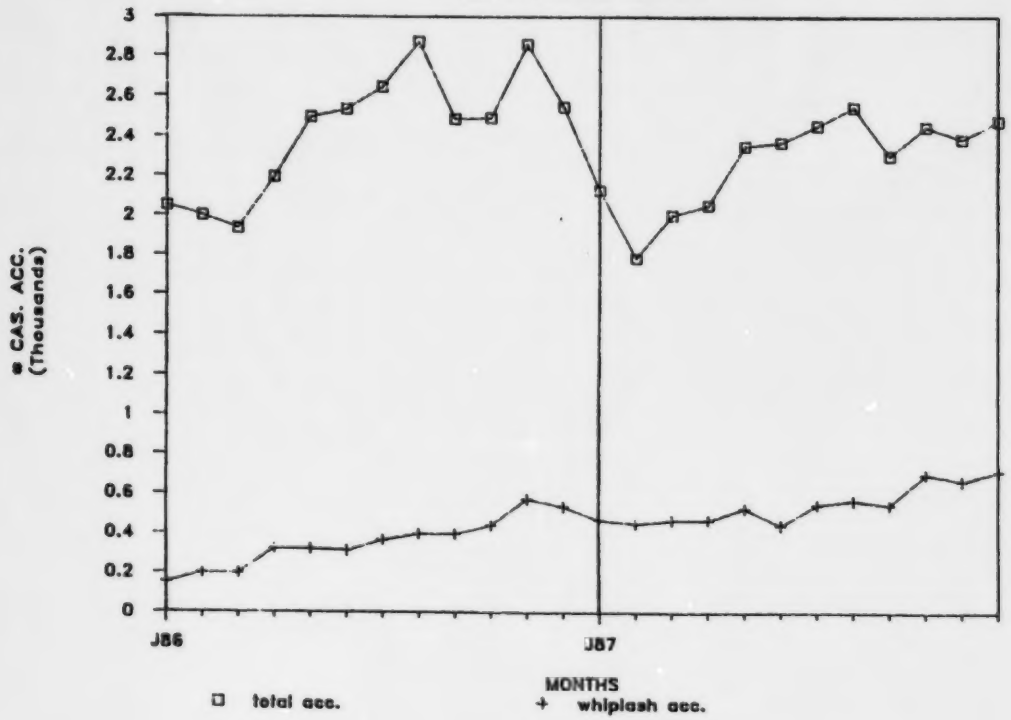


Table 2
Day of Week of Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	DAY OF WEEK						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
No	12.9%	13.6%	13.0%	14.0%	16.8%	16.7%	13.0%
Yes	13.6%	14.4%	13.4%	14.6%	18.0%	15.4%	10.6%
B.C. Total	13.0%	13.8%	13.1%	14.2%	17.1%	16.4%	12.5%

whiplash reports from the public due to a wider familiarity with the injury description or some combination of these factors.

CASUALTY ACCIDENT CHARACTERISTICS:

Time, Location and Condition:

Both casualty traffic accidents producing whiplash injuries and casualty traffic accidents not producing these injuries tended to occur in higher proportions on Fridays and Saturdays, as can be seen from Table 2. On the other hand, Tables 3 and 4 show whiplash-producing casualty accidents tended to occur in higher proportion during the daylight hours when compared to the proportion of non-whiplash-producing accidents, although both sorts tended to be most frequent in daylight (whiplash, 71%; non-whiplash, 62%).

Whiplash-producing accidents tended to occur in higher proportion in municipal as opposed to rural policing jurisdictions, as can be seen from Table 5. This pattern is reflected in Tables 6 through 8 which show these accidents to be relatively more frequent than non-whiplash-producing casualty traffic accidents in business and shopping areas, at intersections, and where there are traffic control devices. Following this pattern, 70% of the whiplash-producing casualty traffic accidents and 63% of the non-whiplash casualty traffic accidents occurred in either the 50 kmh speed zone or 60 kmh speed zone, as can be seen from Table 9.

Turning to weather conditions and road surface conditions, the majority of both whiplash-producing and other sorts of

Table 3
Time of day of Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	TIME OF DAY (two hour intervals)											
	Midnight 2:00 AM	2:00 AM 4:00 AM	4:00 AM 6:00 AM	6:00 AM 8:00 AM	8:00 AM 10:00 AM	10:00 AM NOON	NOON 2:00PM	2:00 PM 4:00 PM	4:00 PM 6:00 PM	6:00 PM 8:00 PM	8:00 PM 10:00 PM	10:00 PM Midnight
No	6.1%	4.8%	2.2%	4.7%	7.4%	8.3%	10.8%	13.9%	15.8%	11.4%	8.1%	6.5%
Yes	3.0%	2.0%	0.7%	5.6%	8.1%	10.0%	13.5%	16.4%	18.8%	11.0%	5.9%	4.9%
B.C. Total	5.4%	4.2%	1.9%	4.9%	7.6%	8.7%	11.4%	14.5%	16.5%	11.3%	7.6%	6.1%

Table 4
Light Conditions During Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	LIGHT CONDITION					
	Day-Light	Dawn	Dusk	Night/Full Illumination	Night/Some Illumination	Night/No Illumination
No	61.5%	1.8%	3.7%	7.6%	14.1%	11.2%
Yes	70.8%	1.5%	4.0%	7.5%	11.7%	4.5%
B.C. Total	63.6%	1.7%	3.8%	7.6%	13.6%	9.7%

Table 5
Percentage of Whiplash Accidents by Police Subdivision
British Columbia, 1987.

LOCATION	Total # of Casualty Accidents	% Non-whiplash Accidents	% Whiplash Accidents
Courtenay Municipal	514	79.0%	21.0%
Courtenay Rural	834	85.5%	14.5%
Kamloops Municipal	769	73.7%	26.3%
Kamloops Rural	955	91.2%	8.8%
Kelowna Municipal	1,195	82.3%	17.7%
Kelowna Rural	1,118	88.5%	11.5%
Nelson Municipal	170	84.7%	15.3%
Nelson Rural	905	90.5%	9.5%
Prince George Municipal	746	81.1%	18.9%
Prince George Rural	856	92.4%	7.6%
Prince Rupert Municipal	171	87.7%	12.3%
Prince Rupert Rural	467	91.9%	8.1%
Victoria Municipal	792	73.5%	26.5%
Victoria Rural	917	81.1%	18.9%
R.C.M.P. Lower Mainland			
Municipal	8,708	69.4%	30.6%
Rural	939	84.1%	15.9%
R.C.M.P. Freeway Patrol	777	69.8%	30.2%
Nelson Area Independents	39	76.9%	20.7%
Vancouver Area Independents	7,047	77.5%	22.5%
Victoria Area Independents	1,806	79.3%	20.7%
Other Police	9	100.0%	0.0%
British Columbia Total	29,737	77.7%	22.3%

Table 6
Land Use at Casualty Accidents involving Whiplash
British Columbia 1987.

Whiplash Accident	LAND USE						
	School/ Playgrnd	Family Res.	Apart-ment	Business/ Shopping	Indus-trial	Agricul-tural	Recreation Camp/Park
No	2.6%	28.6%	6.2%	30.1%	6.1%	23.4%	2.9%
Yes	2.3%	27.7%	6.0%	41.2%	8.3%	12.1%	1.9%
B.C. Total	2.5%	28.4%	6.2%	32.7%	6.6%	20.9%	2.7%

Table 7
Locations of Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	ACCIDENT LOCATIONS				
	Inter-section	Between intersections	"T" Junction	Bridge	Other
No	43.9%	42.5%	6.7%	1.9%	5.0%
Yes	51.9%	33.3%	7.4%	2.4%	4.9%
B.C. Total	45.7%	40.4%	6.9%	2.1%	5.0%

Table 8
Traffic Control Device at Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	TYPE OF TRAFFIC CONTROL						
	None	Stop Sign	Yield Sign	Signal Red	Signal Amber	Signal Green	Other
No	68.6%	14.1%	1.3%	5.7%	1.5%	6.5%	2.3%
Yes	57.0%	12.7%	3.3%	14.0%	2.5%	7.7%	2.7%
B.C. Total	66.0%	13.8%	1.8%	7.6%	1.7%	6.8%	2.4%

Table 9
Speed Zones of Casualty Accidents involving Whiplash
British Columbia 1987.

Whiplash Accident	SPEED ZONE						
	0-40 kph	50 kph	60 kph	70 kph	80 kph	90 kph	100 kph
No	6.5%	51.8%	11.1%	1.9%	9.8%	6.4%	14.4%
Yes	3.3%	56.0%	13.6%	2.2%	6.5%	3.1%	15.2%
B.C. Total	4.2%	52.8%	11.7%	2.0%	9.1%	5.7%	14.7%

casualty traffic accidents occurred in clear and dry weather, as can be seen from Tables 10 and 11. On the other hand, Tables 12 and 13 show whiplash-producing accidents are more likely to have occurred on straight and flat roads, than were non-whiplash-producing casualty accidents.

Vehicles:

As one would expect, 91.2% of the whiplash-producing traffic accidents involved two or more vehicles while 61% of the non-whiplash-producing casualty traffic accidents involved two or more vehicles. Further, comparing whiplash accidents with those not producing whiplash, the former showed a lower proportion of motorcycle accidents (0.9% vs. 8.7%), commercial vehicle accidents (3.5% vs. 5.0%), bicycle accidents (0.3% vs. 9.6%) and out-of-province registered vehicles (7.9% vs. 8.3%) and the same proportion of hit-and-run accidents (4.5%).

Pre-collision and Collision Events:

From Tables 14 and 15 it appears that the typical whiplash-producing casualty accident involves two vehicles, one going straight ahead and the other going straight ahead, stopped or slowing in traffic. In the majority of cases (68%), the accident involved a rear-end collision, although significant proportions involved a 90° intersect (7.5%), and a side-swipe (overtaking: 6.5%).

Post-collision and Contributing Factors:

Table 16 shows that whiplash-producing accidents produce lighter vehicle damage than other casualty-producing accidents. Turning to the factors determined by the investigating police

Table 10
Weather Conditions During Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	WEATHER CONDITION				
	Clear	Cloudy	Raining	Snow/ Sleet	Other
No	54.0%	27.1%	15.6%	2.3%	0.9%
Yes	52.3%	24.9%	20.4%	1.6%	0.7%
B.C. Total	53.6%	26.6%	16.7%	2.1%	0.9%

Table 11
Road Surface Characteristics at Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	ROAD SURFACE CONDITION					
	Dry	Wet	Muddy	Snow	Slush	Ice
No	67.0%	26.2%	0.2%	1.9%	0.9%	3.7%
Yes	64.2%	30.9%	0.2%	1.3%	0.7%	2.8%
B.C. Total	66.4%	27.3%	0.2%	1.8%	0.9%	3.5%

Table 12
Horizontal Road Surface Characteristics at
Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	HORIZONTAL ROAD CHARACTERISTICS				
	Straight	Curve	Sharp Curve	Switch-back	Winding Curves
No	75.4%	15.3%	6.1%	0.7%	2.4%
Yes	87.1%	9.3%	2.4%	0.2%	1.0%
B.C. Total	77.9%	14.0%	5.3%	0.6%	2.1%

Table 13
Vertical Road Surface Characteristics at
Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	VERTICAL ROAD CHARACTERISTICS		
	Flat	Some Grade	Steep Grade
No	64.1%	30.5%	5.4%
Yes	71.8%	25.3%	2.9%
B.C. Total	65.8%	29.3%	4.9%

Table 14
Pre-collision Action of Vehicles in Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	PRE-COLLISION ACTION										
	Going straight	Right turn	Left turn	Slow/ Stop	Stopped in Traffic	Change lanes	Over-taking	Backing	Skidding	Swerving	Other
No N=36,408	59.9%	4.1%	12.5%	3.3%	5.3%	1.4%	1.3%	1.0%	3.4%	1.6%	6.2%
Yes N=12,505	50.4%	3.0%	9.5%	9.2%	17.9%	1.5%	0.5%	0.9%	2.4%	0.7%	4.0%
B.C. Total N=48,913	57.5%	3.7%	11.7%	4.8%	8.5%	1.4%	1.1%	1.0%	3.2%	1.4%	5.7%

Table 15
Motor Vehicle Manoeuver at Point of Impact in Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	VEHICLE MANOEUVER									
	Rear End	Head On	Side Swipe	Inter-secting at 90°	Over-taking	Right turn	Left turn	Run off road to right	Run off road to left	Other
No	24.0%	6.3%	4.4%	12.1%	17.4%	4.3%	6.3%	12.2%	7.9%	5.2%
Yes	68.0%	2.5%	1.7%	7.5%	6.5%	1.4%	2.9%	3.5%	2.2%	2.7%
B.C. Total	36.0%	5.3%	3.6%	10.8%	14.4%	3.5%	5.6%	9.8%	6.4%	4.5%

officer as one of the three major causes of the accident assigned to each vehicle (Table 17), whiplash-producing accidents were primarily caused by careless driving (31%), following too closely (21%), failure to yield right of way (13%), and unsafe speed (11%), whereas other casualty-producing accidents were caused by careless driving (28%), failure to yield (18%), unsafe speed (17%) and alcohol (15%). (It should be noted that, as 6 contributing factors can be assigned to each 2-vehicle accident, the proportions can sum to over 100%).

PERSONS INVOLVED:

In the 12,308 vehicles involved in the 6,635 whiplash-producing traffic accidents in B.C. in 1987, the average driver age was 35 years and 64.3% of the drivers were male. On the other hand, in the 37,224 vehicles involved in the 23,103 other casualty-producing traffic accidents in B.C. in 1987, the average driver age was 34 years and 70.4% of the drivers were male.

Passengers were carried in 35% of the vehicles in both sorts of casualty accidents, and in vehicles where passengers were carried, the average number of passengers was 1.5 in both sorts of accidents. In whiplash-producing accidents 44% of the passengers were male, while in other casualty traffic accidents 49% of the passengers were male.

PERSONS INJURED:

There were an average of 1.6 persons injured and 0.004 persons killed in whiplash-producing casualty accidents in B.C. in 1987, resulting in a total of 10,312 injuries and 27 deaths, while the respective figures for non-whiplash casualty accidents were 1.3 injured, 0.026 killed, 30,944 injuries and 595 deaths.

Table 16
Damage Severity to Vehicles in Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	DAMAGE SEVERITY				
	No Damage	Light Damage	Moderate Damage	Severe Damage	Demolished
No N=33,285	9.9%	24.1%	28.8%	22.7%	14.5%
Yes N=11,248	9.5%	34.2%	34.2%	16.4%	5.6%
B.C. Total N=44,333	9.8%	26.6%	30.1%	21.1%	12.3%

Table 17
Contributing Factors to Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	CONTRIBUTING FACTORS						
	% Driving w/o Due Care	% Alcohol Related	% Driving at Unsafe Speed	% Fail to Yield	% Due to Weather	% Following too Closely	% Vehicle Fault
No	28.4%	14.5%	16.6%	18.5%	8.1%	4.9%	3.9%
Yes	31.1%	7.0%	10.6%	12.5%	7.9%	20.8%	2.6%
B.C. Total	29.0%	12.8%	15.2%	16.9%	8.1%	8.4%	3.6%

Table 18
Victims' Injury Locations
Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	No Injury	Head/ Neck	Chest/ Back	Shoulder/ Arm	Abdomen/ Hip	Lower Leg	All Body
No N=58,580	47.7%	23.7%	7.8%	7.9%	4.0%	7.3%	1.7%
Yes N=20,313	52.0%	38.1%	7.4%	2.0%	0.9%	1.5%	0.4%

Turning to restraint device use, 95% of those in whiplash-producing and 87% of those in other casualty traffic accidents reported that they were using restraint devices. While it is likely that both of these figures represent over-reporting, it is noteworthy that the reported rate is higher in the whiplash-producing accidents. (The positive relationship between seat belt use and neck injury has been established by previous research (i.e. Larde, Twiss, Mackay, 1985; Rutherford et al., 1985), although it must be noted that the use of seat belts probably reduced the occurrence of more serious injuries.

Tables 18 through 20 show the most serious injury locations, the most serious injury types and the state of consciousness for those involved in these accidents, as noted by the investigating police officers. As would be expected, Table 18 shows a higher frequency of head/neck injury locations in whiplash-producing than in non-whiplash producing casualty traffic accidents, while all three tables reflect the more severe nature of the non-whiplash producing accident.

Of those sustaining whiplash injuries, 44% were male and both genders had an average age of 34 years. Of those who sustained other injuries, 57% were male and the average age for the males and females was 30 years and 32 years respectively. In more detail, Figures 4 and 5 graph the ages of male and female whiplash and non-whiplash victims as proportions of each gender and injury type, while Figures 6 and 7 graph the numbers of victims by age. These figures clearly show that whiplash victims were more likely to have been older and female than were non-whiplash victims.

Table 19
Victims' Injury Type:
Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	INJURY TYPE								
	None	Abrasion	Bruise	Laceration	Bleeding	Fracture	Dislocation	Concussion	Whiplash
No N=58,580	53.8%	6.4%	21.2%	7.1%	4.1%	4.6%	1.2%	1.3%	0.0%
Yes N=20,313	50.5%	1.1%	4.8%	1.1%	0.8%	0.5%	0.2%	0.3%	40.7%

Table 20
Victim's State of Consciousness
Casualty Accidents involving Whiplash
British Columbia, 1987.

Whiplash Accident	STATE OF CONSCIOUSNESS					
	Appears Normal	Agitated	Incoherent	Semi-conscious	Unconscious	Appears Dead
No N=58,580	86.1%	9.0%	1.2%	2.1%	0.6%	1.0%
Yes N=20,313	92.5%	6.3%	0.4%	0.7%	0.1%	0.0%

Finally, it must be emphasized that all injury data were collected by the police, as opposed to by physicians, and that these data refer to the most serious injury suffered by the victim. It follows that the actual frequency of whiplash-type injuries could be substantially higher as the victim may have sustained other more serious or apparent injuries and thus whiplash was not recorded.

REFERENCES

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Rutherford W.H., et al. Medical effects of seat belt legislation in the United Kingdom. HMSO, 1985

Figure 4 AGE & GENDER, NON-WHIPLASH VICTIMS

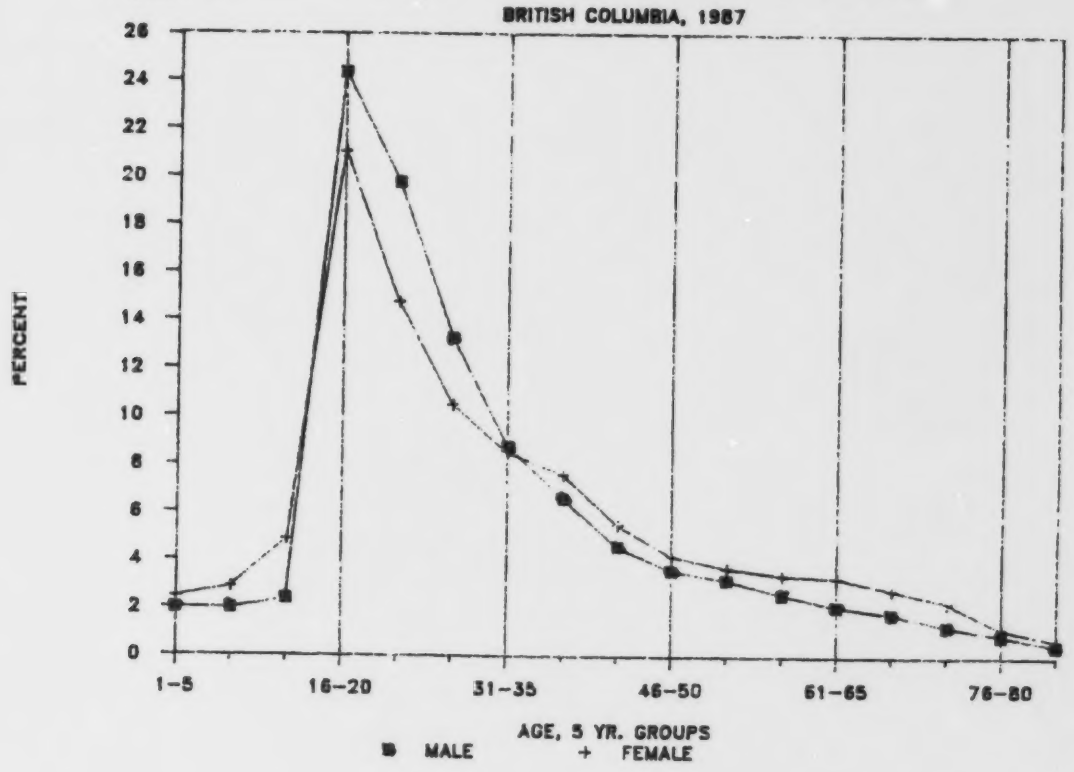


Figure 5 AGE & GENDER, WHIPLASH VICTIMS

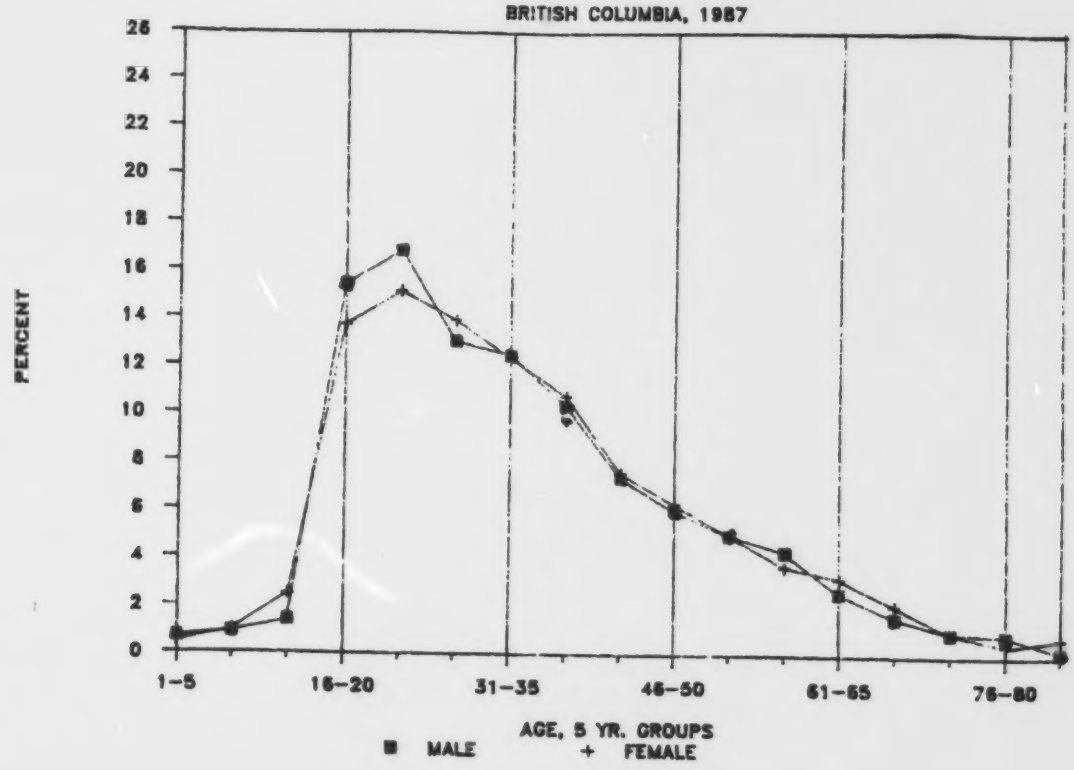


Figure 6

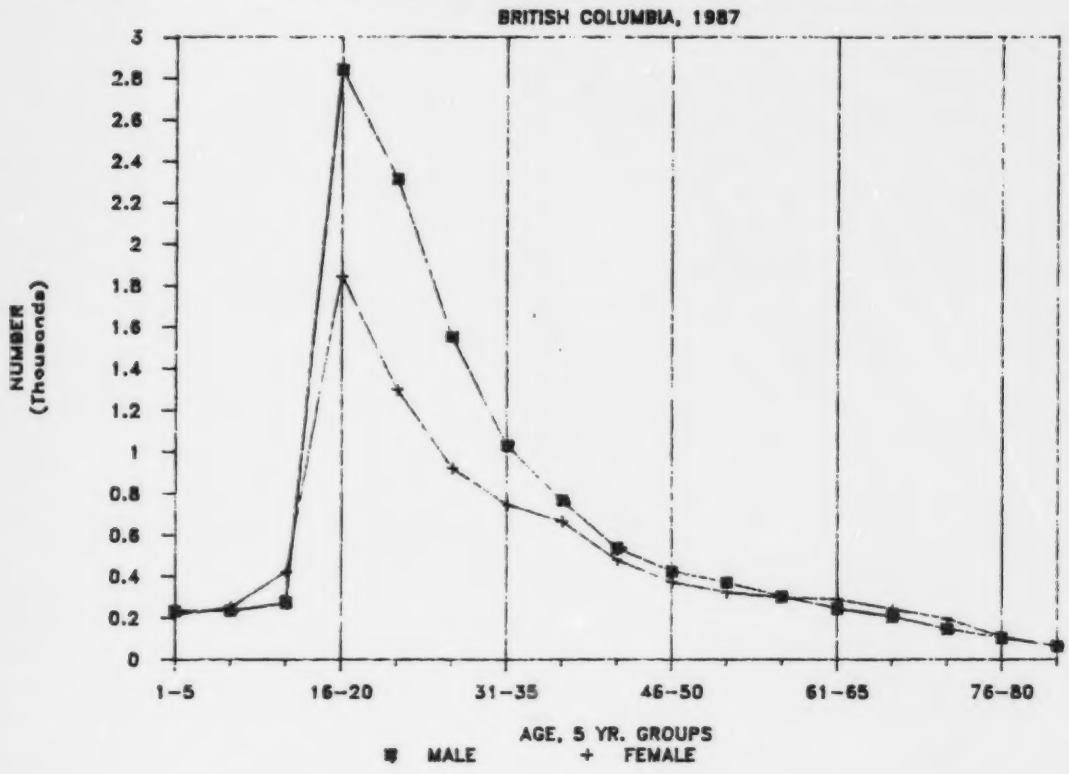
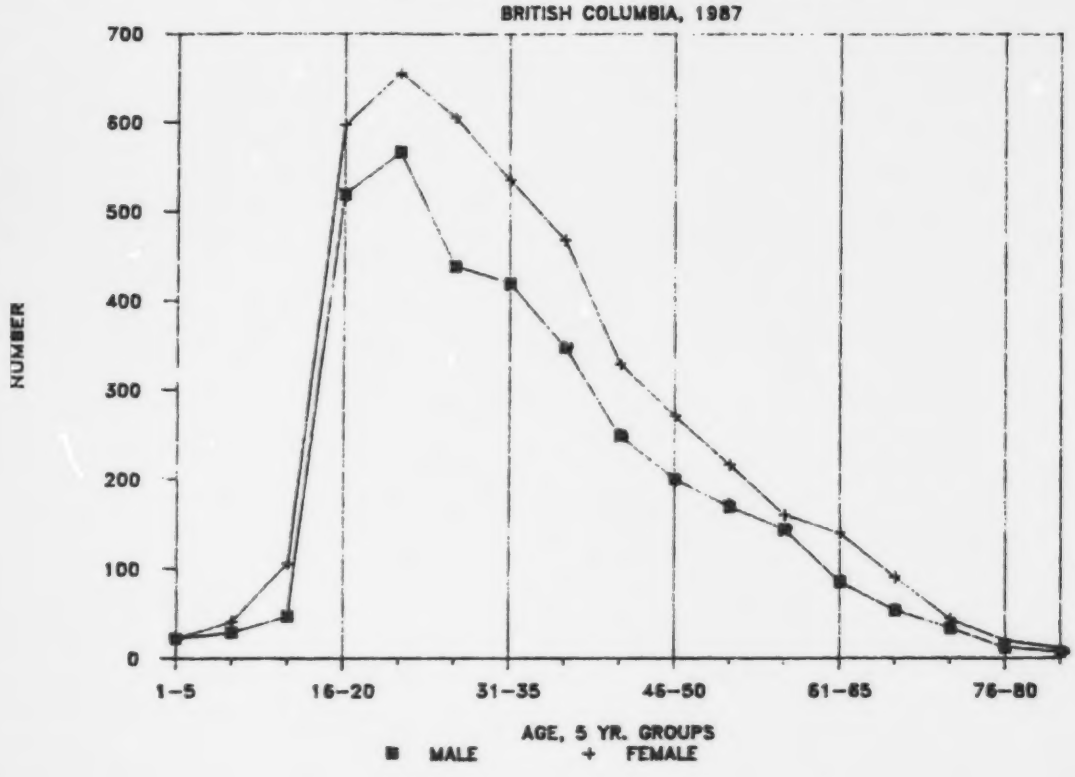


Figure 7



SECTION 2

DRIVER CHARACTERISTICS

Traffic Accidents and Convictions: Group Totals versus Rate per Kilometer Driven.

Convicted Drinking Drivers: Impaired Or Problem Drivers?

Traffic Accidents and Convictions: Group Totals versus Rate per Kilometer Driven.

Risk Analysis, Vol. 9, No. 1, 1989

Traffic Accidents and Convictions: Group Totals versus Rate per Kilometer Driven

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Received December 15, 1987; revised May 9, 1988

Using group totals, young drivers, male drivers, and especially young male drivers are substantially over-represented in terms of both traffic accidents and traffic-related convictions. On the other hand, when accidents and convictions are considered in terms of their rates while the person is actually driving, older drivers and female drivers gain in importance, with the female drivers' traffic accident rate and rates for some convictions *exceeding* the male drivers' rates. Similarly, the older drivers' accident rate and rates on some convictions exceeded the younger drivers' rates when considered in terms of driving exposure. In addition, these findings lead one to speculate that recent driving exposure more than driver age is the central factor in traffic accident involvement. The implications for policy makers and educators are clear. Although young male drivers are undeniably a legitimate focus for traffic accident countermeasures, they should not be targeted at the expense of drivers who drive less but have as high or higher accident rates—female and older drivers.

KEY WORDS: Traffic accident rates; traffic conviction rates; driver age; driver gender; speeding convictions; restraint device convictions; impaired driving convictions; sign/signal convictions; no insurance/driver's license convictions.

1. INTRODUCTION

In the area of traffic accident countermeasures, researchers, policy makers, and educators have emphasized the role of male drivers, young drivers, and especially young male drivers. The reason for this emphasis is that these drivers as a population or group tend to have more traffic accidents than do older drivers and female drivers (e.g., Ref. 1).

However, it has also been shown that young drivers and male drivers tend to drive more than do older drivers and female drivers (e.g., Ref. 2). Consequently, while a population of drivers may have relatively frequent traffic accidents, as individuals they may be relatively safe drivers. For example, professional commercial vehicle drivers as a group tend to have a high number of traffic accidents and traffic law convictions, yet it can be argued that their greater exposure to driving makes them safer than average drivers per mile or hour driven.[3]

The difference between traffic accident involvement for drivers taken as group totals, as opposed to drivers' accident rates while actually driving, can be a problem for those allocating countermeasure resources. That is, should groups of drivers that have a large absolute number of accidents be targeted for educational programs even if the individuals in those groups are relatively safe drivers per kilometer driven, or should those groups that have the highest frequency of accidents per kilometer driven be targeted, irrespective of the proportion of accidents they contribute to the total accident volume? Clearly, in an environment of limited resources, a balance must be struck.

Consequently, in an effort to assist policy makers and educators in their decision making concerning which groups to target for traffic accident countermeasures, this

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Table I. Total Number of Accidents by Gender and Age

	Total number of accidents					
	Male		Female		Total	
	N	%	*N*	%	*N*	%
Gender						
Male	1,953	72%				
Female			743	28%		
					2,696	100%
Age (years)						
16–20	112	6%	46	6%	158	6%
21–25	479	25%	156	21%	635	24%
26–30	347	18%	122	16%	469	17%
31–35	171	9%	79	11%	250	9%
36–40	174	9%	82	11%	256	9%
41–45	125	6%	55	7%	180	7%
46–50	94	5%	43	6%	137	5%
51–55	103	5%	36	5%	139	5%
56–60	100	5%	29	4%	129	5%
61–65	83	4%	28	4%	111	4%
66–70	38	2%	25	3%	63	2%
70+	127	7%	42	6%	169	6%
Total	1,953	100%	743	100%	2,696	100%

Table II. Total Number of Convictions by Gender and Age

	Total number of convictions					
	Male		Female		Total	
	N	%	*N*	%	*N*	%
Gender						
Male	8,770	81%				
Female			2,118	19%		
					10,888	100%
Age (years)						
16–20	523	6%	91	4%	614	6%
21–25	2,629	30%	510	24%	3,139	29%
26–30	1,760	20%	432	20%	2,192	20%
31–35	942	11%	288	14%	1,230	11%
36–40	826	9%	293	14%	1,119	10%
41–45	585	7%	164	8%	749	7%
46–50	358	4%	94	4%	452	4%
51–55	313	4%	74	3%	387	4%
56–60	270	3%	65	3%	335	3%
61–65	230	3%	41	2%	271	2%
66–70	145	2%	34	2%	179	2%
70+	189	2%	32	2%	221	2%
Total	8,770	100%	2,118	100%	10,888	100%

paper will examine drivers' traffic accident and traffic conviction records both in terms of absolute numbers and numbers weighted by age and gender for driving exposure. (By weighting for driving exposure, accident and conviction rates per kilometer driven can be compared with accident and conviction rates as group totals.)

Table III. Proportions of Exposure used to Weight Variables

		Sample size					
		Male		Female		Total	
Proportions (weights)		*N*	%	*N*	%	*N*	%
Gender							
Male	0.711	5,353	58%				
Female	0.289			3,920	42%		
						9,273	100%
Age (years)							
16–20	0.067	260	5%	184	5%	444	5%
21–25	0.133	609	11%	466	12%	1,075	12%
26–30	0.132	707	13%	617	16%	1,324	14%
31–35	0.132	557	10%	518	13%	1,075	12%
36–40	0.1015	530	10%	449	11%	979	11%
41–45	0.1015	379	7%	319	8%	698	8%
46–50	0.081	323	6%	248	6%	571	6%
51–55	0.081	338	6%	224	6%	562	6%
56–60	0.058	324	6%	211	5%	535	6%
61–65	0.058	326	6%	208	5%	534	6%
66–70	0.0255	269	5%	175	4%	444	5%
70+	0.0255	731	14%	301	8%	1,032	11%
Total		5,353	100%	3,920	100%	9,273	100%

General weighting formula: observation 1/[2*gender wt.)]*[1/(12*age wt.)]. Exposure weights taken from Stewart and Sanderson.[2]

2. METHOD

Traffic accident and conviction data were drawn from a random sample of 9,273 British Columbia driver records taken from the B.C. Ministry of Transportation and Highways data base in December, 1984. This sample size represents an accurate picture of the approximately 2 million record data base with about a 1% error. As the codes for recording offences were changed in June, 1980, all records of offences and traffic accidents prior to that date were deleted, producing a time span of 55 months (from June, 1980 to December 1984) for the data. Conviction records were supplied to the Ministry through the court system, while accident records came from accident reports (MV104) for police-investigated and self-reported traffic accidents.

Age and gender exposure weights were taken from Stewart and Sanderson[2] and can be found in Table III. The weights were derived from trip diaries recorded by

Traffic Accidents and Convictions

Table IV. A Comparison of Male and Female Drivers' Traffic Conviction and Accident Records British Columbia, June 1980–December 1984

Number of convictions	Male driver $N = 5,353$		Female driver $N = 3,920$		Overall		value	two-tailed probability
	Mean	SD	Mean	SD	Mean	SD		
Speeding	0.810	1.444	0.281	0.721	0.587	1.222	23.16	0.000
Restraint device	0.112	0.379	0.037	0.206	0.080	0.320	12.18	0.000
No valid license	0.086	0.410	0.013	0.127	0.054	0.324	12.22	0.000
Speeding in school zone	0.059	0.266	0.047	0.223	0.054	0.248	2.57	0.010
Disobey sign/ signal	0.063	0.286	0.029	0.183	0.048	0.248	6.92	0.000
Stop sign	0.062	0.281	0.022	0.156	0.045	0.236	8.91	0.000
Red light	0.056	0.261	0.018	0.145	0.040	0.220	8.99	0.000
Driving while impaired	0.056	0.275	0.009	0.118	0.036	0.223	10.92	0.000
Excess speed for conditions	0.048	0.250	0.009	0.091	0.031	0.201	10.58	0.000
24-hr license suspensions	0.043	0.248	0.006	0.083	0.027	0.196	10.07	0.000
No insurance	0.038	0.232	0.006	0.075	0.024	0.184	9.74	0.000
Yellow light	0.032	0.187	0.008	0.091	0.021	0.154	7.94	0.000
All convictions	1.638	2.667	0.540	1.126	1.174	2.221	27.01	0.000
Total number of accidents	0.364	0.720	0.189	0.480	0.290	0.636	14.05	0.000

Table V. A Comparison of Male and Female Drivers' Traffic Conviction and Accident Records Weighted for Exposure British Columbia, June 1980–December 1984

Number of convictions	Male driver $N = 5,353$		Female driver $N = 3,920$		Overall		Value	Two-tailed Probability
	Mean	SD	Mean	SD	Mean	SD		
Speeding	0.487	0.876	0.397	1.061	0.449	0.959	4.31	0.000
Restraint device	0.074	0.287	0.055	0.339	0.066	0.310	2.86	0.004
No valid license	0.044	0.213	0.017	0.167	0.033	0.196	7.03	0.000
Speeding in school zone	0.042	0.213	0.072	0.389	0.054	0.301	−4.31	0.000
Disobey sign/ signal	0.041	0.211	0.044	0.297	0.042	0.251	−0.53	0.598
Stop sign	0.037	0.180	0.033	0.274	0.035	0.225	0.85	0.397
Red light	0.039	0.209	0.026	0.217	0.033	0.212	2.90	0.004
Driving while impaired	0.033	0.186	0.016	0.208	0.026	0.196	4.15	0.000
Excess speed for conditions	0.029	0.170	0.012	0.155	0.022	0.164	5.02	0.000
24-hr license suspensions	0.024	0.148	0.008	0.115	0.018	0.135	5.85	0.000
No insurance	0.022	0.143	0.008	0.133	0.059	0.139	4.54	0.000
Yellow light	0.019	0.134	0.012	0.135	0.016	0.134	2.82	0.005
All convictions	1.007	1.580	0.796	1.709	0.918	1.638	6.05	0.000
Total number of accidents	0.265	0.598	0.343	1.150	0.298	0.876	−3.87	0.000

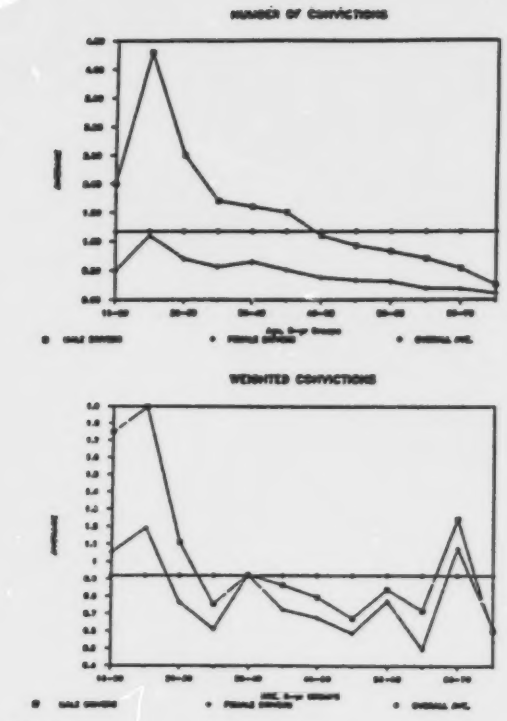

Fig. 1.

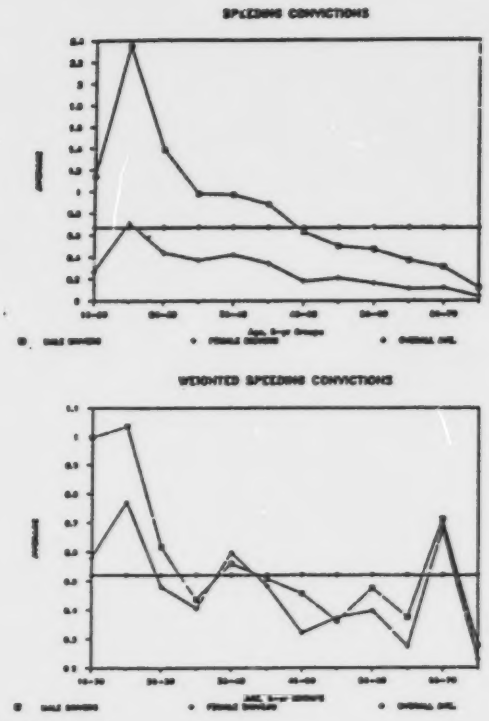

Fig. 2.

11,000 Canadian households from an initial random sample of 16,000 households. Those participating recorded trip distances, road type, purpose of trips, and so on. These weights were applied to total recorded traffic accidents and convictions as well as to the twelve most common convictions.

3. RESULTS AND DISCUSSION

From Table I it can be seen that male drivers had 72% of the total number of reported accidents, and of the accidents involving male drivers, males under 31 years of age (who comprise about 30% of the male driving population) had about half of the accidents. Similarly, from Table II it can be seen that male drivers had 81% of the total convictions, and of the convictions involving male drivers, those under 31 years of age had 56%. However, from Table III it can be seen that male drivers have about two-and-a-half times the driving exposure as female drivers, while drivers in the 21–25-year-old group have over twice the exposure of those in the 56–65-year-old group and over five times the exposure of those in the 65 and over group.

Table IV shows, for both male and female drivers, the mean and standard deviation for total accidents, total convictions, and for the following common convictions; speeding, failure to use a restraint device, failure to produce a valid drivers' license, speeding in a school zone, disobeying a sign or signal (e.g., yield sign), disobeying a stop sign, disobeying a red light, driving while impaired, excessive speed for conditions, a 24-hr license suspension for driving while impaired (generally given when blood alcohol is not sufficient to charge under the Criminal Code), driving with no insurance, and disobeying a yellow light. Student's *t*-tests were done between the genders and all showed male drivers as a group to have had significantly higher average accident and conviction rates than did the female drivers as a group.

Table V shows the same comparisons as Table IV, except the data were first weighted for exposure levels

Traffic Accidents and Convictions

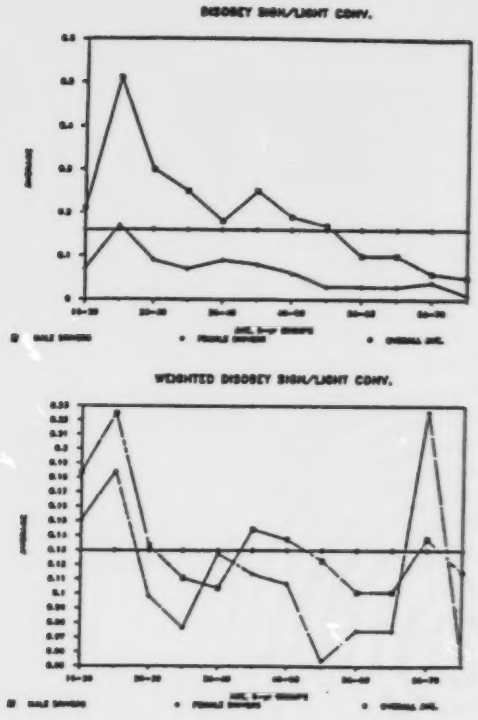

Fig. 3.

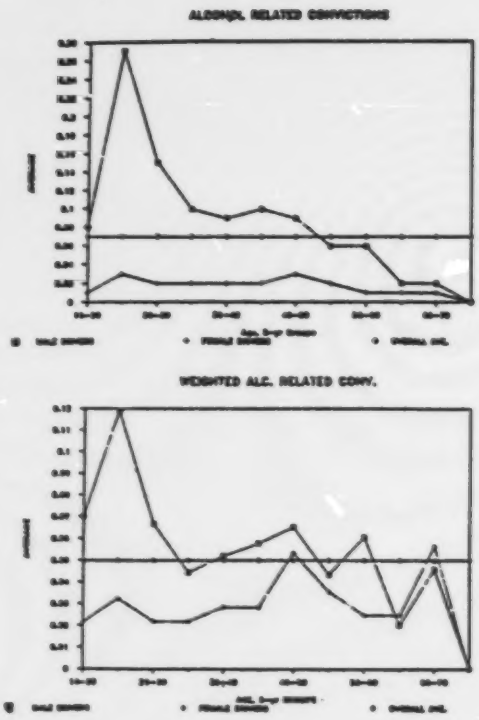

Fig. 4.

in order to illustrate accident and conviction rates per kilometer driven. From these data it can be seen that the magnitude of the differences between the genders decreased substantially on all measures, except for those where the direction of the differences reversed entirely. To illustrate, the statistically significant difference between genders disappeared for both disobey sign or signal convictions and stop sign convictions, while for speeding in school zone convictions, the average conviction rate for females exceeded the average for males. However, the single most important result shown in Table V is that, after driving exposure was taken into consideration, female drivers had a statistically significantly higher level of traffic accident involvement than did male drivers. (Interestingly, Williams[4] found that fatal crash involvement per kilometer driven was higher for men than for women at every age under 60. Nonetheless, as fatal accidents comprise a relatively small proportion of all casualty-producing traffic accidents (1.7% in B.C. in 1986), it is arguably worthwhile to consider the development of countermeasures that address less severe as well as more severe accidents.)

Figures 1a and 1b through 7a and 7b compare male drivers and female drivers using unweighted and weighted averages in terms of 5-year age groupings for total convictions, speeding convictions (sum of speeding, speeding in school zone and excessive speed for conditions), disobey sign/light (sum of red light, yellow light, sign/signal and stop sign convictions), alcohol-related convictions (sum of driving while impaired and 24-hr license suspension convictions), the sum of no insurance and no license convictions, restraint device convictions, and total accidents. Additionally, each graph shows the average value for the variable. It should be noted that the drop in the 16–20-year-old group has to do in some portion with the cumulative nature of these measures. That is, as the driving record data are averaged over a 55-month period, a 20-year-old driver who has been driving for 5 years will have had longer to accumulate a record than a 19-year-old driver who has been driving only for four years, and so on down to a 16-year-old in his/her first month of driving. Similarly, regarding the sharp decrease in the average values of all variables for

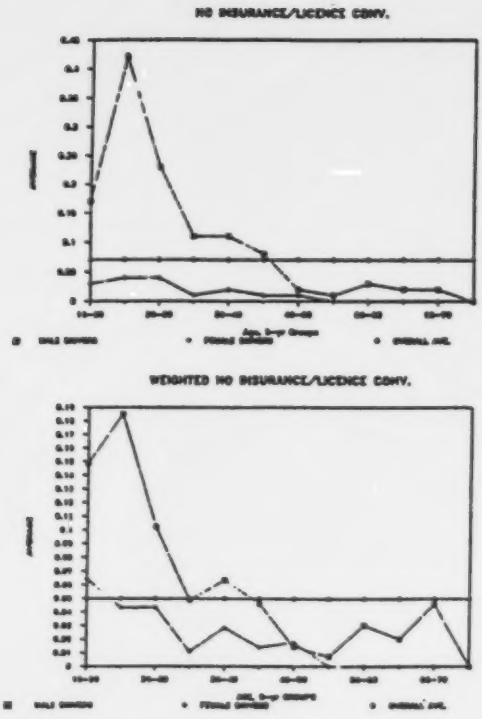

Fig. 5.

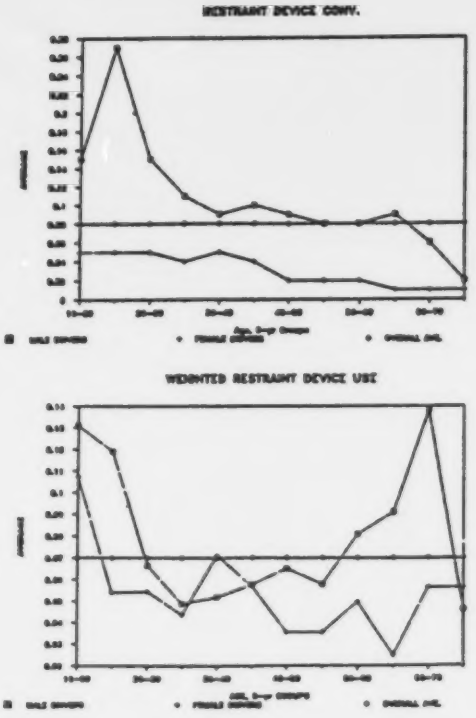

Fig. 6.

those in the 71+ year age group, as driver's licenses are issued every 5 years, a relatively high portion of those in that group are no longer driving owing to illness or death. Therefore, the 71+ group does not fully represent active drivers in that age category. Clearly these two measurement problems will artificially reduce the levels for the oldest and youngest age groups, and ought to be kept in mind when interpreting these data.

As would be expected, the exposure weighting increased the presence of female and older drivers in all of the weighted graphs. Further, young male drivers had the highest average conviction rates for all of the weighted as well as for all of the unweighted conviction data variables.

In more detail, turning to the total average number of convictions by age and gender as illustrated in Fig. 1a, all age groups of female drivers had rates below the overall average, while the values for the males were above the overall average for all age groups younger than 51. However, when conviction rate per kilometer are examined using the data weighted for exposure, Fig. 1b shows that young females (16–25 years) and older females (66–70 years) had conviction rates above the overall average. Further, only males under 31 years of age (as opposed to those under 51 years) and those in the 66–70-year group had conviction rates above the overall average. That is, both young males and young females, as well as older (66–70 years) male and female drivers accumulated higher than average conviction rates when viewed in terms of rates per kilometer as opposed to rates as group totals.

Turning to specific conviction types, a comparison of Fig. 2a with 2b and a comparison of Fig. 3a with 3b both show a similar pattern of change from unweighted to weighted data as did Figs 1a and 1b. That is, speeding and sign/signal convictions appear to be primarily middle-aged and younger male phenomena when examined in terms of group totals. However, when examined in terms of conviction rates-per kilometer, both young male and female drivers and male and female drivers between 66 and 70 had the highest conviction rates.

On the other hand, alcohol-related convictions and

Traffic Accidents and Convictions

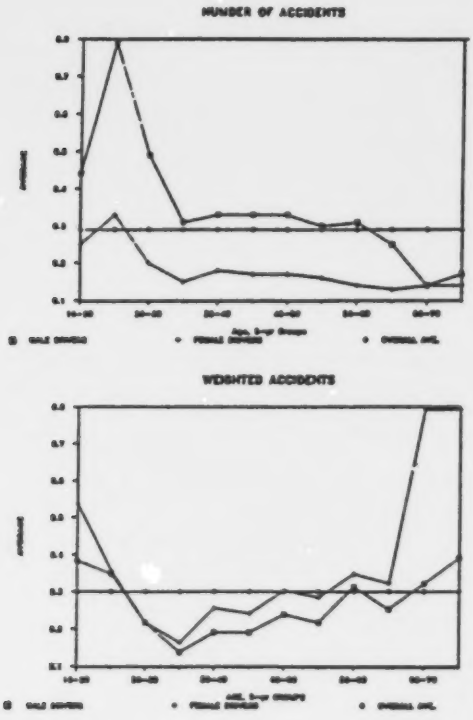

Fig. 7.

no insurance/license convictions appear to be primarily young to middle-aged male driver phenomena, irrespective of whether or not the data are weighted for driving exposure, as can be seen from Figs. 4a, 4b, 5a, and 5b.

Finally, although restraint device convictions also tended to be a male driver phenomenon for both the unweighted and weighted data, the conviction rate of the older male driver was substantially increased in the weighted data, within rates for males rising steadily from 31 to 70 years, as can be seen from Figs. 6a and 6b.

Turning to average traffic accident frequencies for each gender age group, Fig. 7a shows that, in terms of totals irrespective of amount of driving exposure, young drivers, male drivers, and especially the young male drivers groups had relatively high accident frequencies. However, from Fig. 7b it can be seen that, when the data are weighted to reflect driving exposure, female drivers had higher accident rates than did male drivers, and older drivers had accident rates as high as or higher than younger drivers. Generally, for both genders the weighted accident rates gradually fell from the 16–20-year-old group down to the 31–35 group, and then increased steadily to the oldest group. In particular, older (61+ years) female drivers had the highest accident rate (perhaps recent widows who had not driven frequently for a number of years?)

The results of this study cannot be used to explain the gender and age differences found in traffic conviction rates, conviction types, and traffic accident rates. However, they do illustrate that these differences exist. More importantly, they clearly show how accident and conviction data can be examined from two valid perspectives—as totals for groups and as rates per kilometer. Using group totals, irrespective of driving exposure, young drivers, male drivers, and especially young male drivers are substantially overrepresented in terms of both traffic accidents and traffic-related convictions. On the other hand, when accidents and convictions are considered in terms of their rates while the person is actually driving, older drivers and female drivers gain in importance, with the female drivers' traffic accident rate and rates for some convictions *exceeding* the male drivers' rates. Similarly, the older drivers' accident rate and rates on some convictions exceeded the younger drivers' rates when considered in terms of driving exposure. In addition, these findings lead one to speculate that recent driving exposure more than driver age is the central factor in traffic accident involvement.

The implications for policy makers and educators are clear. Although young male drivers are undeniably a legitimate focus for traffic accident countermeasures, they should not be targeted at the expense of drivers who drive less but have as high or higher accident rates—female and older drivers.

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Convicted Drinking Drivers: Impaired Or Problem Drivers?

Convicted Drinking Drivers: Impaired Or Problem Drivers?

CONVICTED DRINKING DRIVERS: IMPAIRED OR PROBLEM DRIVERS?

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It has been estimated that alcohol is involved in about 8% of property-damage-only traffic accidents, 17% of non-fatal injury producing traffic accidents and 55-58% of all fatal accidents (Fell, 1983), making it a serious and major contributor to the overall frequency of these accidents. On the other hand, drinking and driving does not inevitably lead to a traffic accident nor to being charged by the police with Driving While Impaired (DWI) (Ross, 1984; Ross, 1985). Arguably, there is more than the simple fact of alcohol consumption that leads to an alcohol-related traffic accident.

In 1977, in his article "The Impaired Driver Problem *vs.* the Impaired Problem Driver", Simpson (1977) pointed out that alcohol-related traffic accidents can be conceptualized from at least two different positions: the first suggests simply that alcohol consumption impairs the driver and thus traffic accidents occur, while the other position suggests that these accidents are caused by problem drivers who also consume alcohol.

Since that time, research has shown that there are important differences between drivers who drink and drivers who do not drink, between drivers who are involved in alcohol-related traffic accidents and those who are not and between drivers who are apprehended by the police for drinking driving and those who are not (see Donovan, Marlatt, and Salzberg, 1983, for a review). However, from a traffic accident countermeasures point of view, Simpson's dichotomy of the impaired driver problem *vs.* the impaired problem driver still stands.

For example, if an apprehended drinking driver is, generally, an average driver who unintentionally becomes impaired, drives and is apprehended, then education focussing on the effects of alcohol and laws restricting access to alcohol will reduce impairment severity and frequency (and thus presumably reduce alcohol-related traffic accidents). On the other hand, if an apprehended drinking driver is a generally unsafe driver, having a record of multiple convictions and traffic accidents, then the problem of these traffic accidents might be better addressed through driver training, education and counselling that includes, but is not limited to, the topic of alcohol and driving.

Put simply, is the heart of the problem primarily alcohol consumption or primarily dangerous driving habits that happen to include alcohol consumption?

METHOD

In order to examine the "impaired driver problem *vs.* the impaired problem driver" question, a random sample of 9,273 driver records was taken from the British Columbia Ministry of Transportation and Highways driver record data base in December, 1984. This sample size represents an accurate picture of the approximately two million record data base with about 1% error in either direction. Records of offences and traffic accidents were examined between June, 1980 and December, 1984 inclusive (55 months).

Analyses: Driver records were sorted into three groups and then the groups were compared in terms of gender distribution, age distribution, conviction history and recorded traffic accident history. The three groups were comprised of: those drivers who had not been convicted of DWI (N=8,992); those drivers who had been convicted of DWI once only (N=235); and those

drivers who had been convicted of DWI more than once (N=46).

Before presenting any results, two points should be noted. First, it has been shown that, in British Columbia, those convicted of DWI are roughly representative of the overall drinking-driving population in terms of both age and gender (Mercer, 1983). Second, care must be taken in interpreting findings associated with the group having more than one DWI conviction, as the sample size for this group consisted of only 46 persons. This relatively small sample size can produce somewhat unreliable results and, therefore, caution must be exercized in interpreting the results.

TABLE 1
DWI Convictions by Recorded Convictions (Not DWI)
British Columbia, June, 1980 - December, 1984

# DWI Conv.	Recorded Convictions (Not DWI)						
	0 Conv.	1 Conv.	2 Conv.	3 Conv.	4 Conv.	5+ Conv.	TOTAL %
0 DWI Conv.	60.0	17.5	8.4	5.0	2.9	6.2	100.0
1 DWI Conv.	21.7	20.4	14.5	10.6	6.4	26.4	100.0
2+ DWI Conv.	19.6	15.2	13.0	8.7	13.0	44.1	100.0

TABLE 2
Conviction Ranking and Rates, British Columbia, June, 1980 - Dec. 1984:
Drivers with 0 DWI Convictions, 1 DWI Conviction, 2+ DWI Convictions

RANK	CONVICTIONS/100 DRIVERS		
	0 DWI Convictions	1 DWI Conviction	2+ DWI Convictions
1	M151 Speeding (56.2)	M151 Speeding (140.9)	M151 Speeding (130.4)
2	M152 Speeding in school zone (5.3)	M149 Excess speed/ conditions (19.1)	M134 Fail to stop at red light (15.2)
3	M130 Disobeying a signal (4.8)	M163 Failing to stop at sign (11.5)	C233 Criminal Negligence (13.0)
4	M163 Failing to stop at sign (4.3)	M134 Fail to stop at red light (11.1)	M163 Failing to stop at sign (10.9)
5	M134 Fail to stop at red light (3.8)	M152 Speeding in school zone (10.6)	M149 Excess speed/ conditions (10.9)
6	M149 Excess speed/ conditions (2.7)	M130 Disobeying a signal (8.9)	M167 Improper turn at intersection (8.7)
7	M133 Fail to stop at yellow light (2.2)	R7 Loud/unnecessary noise from a vehicle (6.4)	M152 Speeding in school zone (8.7)
8	M130 Disobeying a signal (1.6)	C233 Criminal Negligence (4.3)	R7 Loud/unnecessary noise from a vehicle (6.6)
9	M155 Illegal lane change (1.0)	M155 Illegal lane change (3.8)	M130 Disobeying a signal (6.5)
10	M157 Passing on a dbl solid line (0.7)	M154 Failure to drive on right (3.8)	M157 Passing on a dbl solid line (6.5)

RESULTS

Sex and DWI Convictions: Of the total sample, 3.0% had been convicted of DWI once or more. However, of the male drivers, 4.6% had been convicted of DWI one or more times, while for the female drivers the figure was only 0.9%. Further, 57% of those with no DWI convictions were male, while of those convicted more than once, 94% were male.

Age and DWI Convictions: The age group with the highest proportion of one or more DWI convictions was the 21-25 year old group (8.1%), followed by the 26-30 year old group (4.3%), and the 46-50 year old group (4.2%), while the groups of drivers under 20 years of age and over 60 years of age showed less than a 2% conviction rate.

Conviction History: Table 1 shows that, of those with no DWI convictions, 40% had been convicted of one or more other (i.e. not DWI) driving offences, while the figure for the one DWI conviction group was 78.3% and the figure for the two or more DWI conviction group was 80.4%. Another way of expressing the differences is that, those with no DWI convictions averaged 1.1 other convictions per driver, while those with 1 DWI averaged 2.9 other convictions per driver and those with 2 or more DWI averaged 4.5 other convictions per driver.

While those convicted of DWI generally showed a higher frequency of other convictions than did those with no DWI convictions, the pattern of offences associated with the DWI groups showed very little difference from the pattern of offences for the no DWI group, as can be seen from Table 2. That is, as a group, those not convicted of DWI seemed to commit roughly the same types of driving offences as did those convicted of DWI. However, those convicted of DWI committed the offences more frequently. (The numbers in parentheses in this table represent conviction rates per 100 drivers for each offence.)

Traffic Accident History: From Table 3 it can be seen that of those with no DWI convictions, 20.9% have had one or more traffic accidents recorded through Traffic Accident Report Forms (MV104), completed either by the motorist for less serious accidents, or by the police for more serious accidents. For those with only one DWI conviction, 50.6% had one or more traffic accidents recorded and for those with two or more DWI convictions, the figure was 60.9%.

Another way of expressing the differences is that, those with no DWI convictions averaged about .26 traffic accidents per driver while those with one or more DWI averaged about .81 traffic accidents per driver — over three times as many.

Figure 1 shows that for all driver age groupings, those with one or more DWI convictions had more frequent reported traffic accidents than did those with no DWI convictions. For example, in the 21-25 year old driver group, 37% of those with no DWI convictions had one or more recorded accidents while 66% of those with 1 or more DWI convictions in that age group had one or more traffic accidents. However, it should be noted that some degree of the variation from age group to age group in the "one or more DWI" category can be attributed to the relatively small sample sizes when broken into age groupings.

TABLE 3
#DWI Convictions by # Recorded Traffic Accidents: Row Percentages
British Columbia June 1980 - December, 1984

# DWI Conv.	# Recorded Traffic Accidents (Accd.)				
	0 Accd.	1 Accd.	2 Accd.	3+ Accd.	TOTAL (%)
0 DWI Conv.	79.1	16.0	3.6	1.3	100%
1 DWI Conv.	49.4	28.9	14.5	7.2	100%
2+ DWI Conv.	39.1	41.3	17.4	2.2	100%

DISCUSSION

From these analyses it appears that the groups of drivers who had been convicted of DWI differed substantially from those who had not been convicted of DWI. Convicted drinking drivers were more likely to be male: 4.6% of the male drivers had been convicted of DWI while the figure for the female drivers was only 0.9%. About half the convicted drinking drivers were between 20 and 30 years of age, while only about a quarter of those not convicted of DWI were in that age group. It is beyond the scope of this paper to speculate as to the reasons for these age and gender differences.

Regarding conviction history, 60% of those not convicted of DWI had no other driving convictions, while for those convicted of DWI only about 20% had no other driving convictions. That is, those with DWI convictions had about twice the likelihood of having other driving-related convictions.

On the other hand, while the DWI convicted group showed a much higher **rate** of other driving-related convictions than the group not convicted of DWI, the **pattern** of convictions showed no discernable differences. To illustrate, speeding was the single most frequently cited conviction for both those convicted and not convicted of DWI, while running a red light and ignoring a stop sign were within the five most frequently recorded convictions for all groups of drivers.

Similar to conviction frequencies, those convicted of DWI had a relatively high rate of recorded traffic accidents when compared to those not convicted of DWI. In fact, those convicted of DWI had over twice the rate of traffic accidents: about 80% of those not convicted of DWI had no recorded accidents while about 40-50% of those convicted of DWI had no recorded accidents.

Arguably, some portion of these DWI convictions stemmed from traffic accidents — about 20% in one B.C. study (Mercer, 1983, p. 10). Nonetheless, the magnitude of the differences between those convicted of DWI in terms of both traffic accident and conviction history are enough to lend credibility to the notion that there is probably a difference between these groups in their overall driving habits.

In sum, the results of these analyses suggest that the situation is one of the impaired problem driver as opposed to the impaired driver problem. That is, when compared to drivers who have not been convicted of driving while impaired, those convicted of DWI have had almost three times as many other driving-related convictions and over twice the number of reported traffic accidents. On the whole, convicted drinking drivers appear to be relatively dangerous drivers who also consume alcohol. From this it follows that drinking driving countermeasures might best be associated with a broad spectrum of driver training and education that includes, but is not limited to, information on alcohol.

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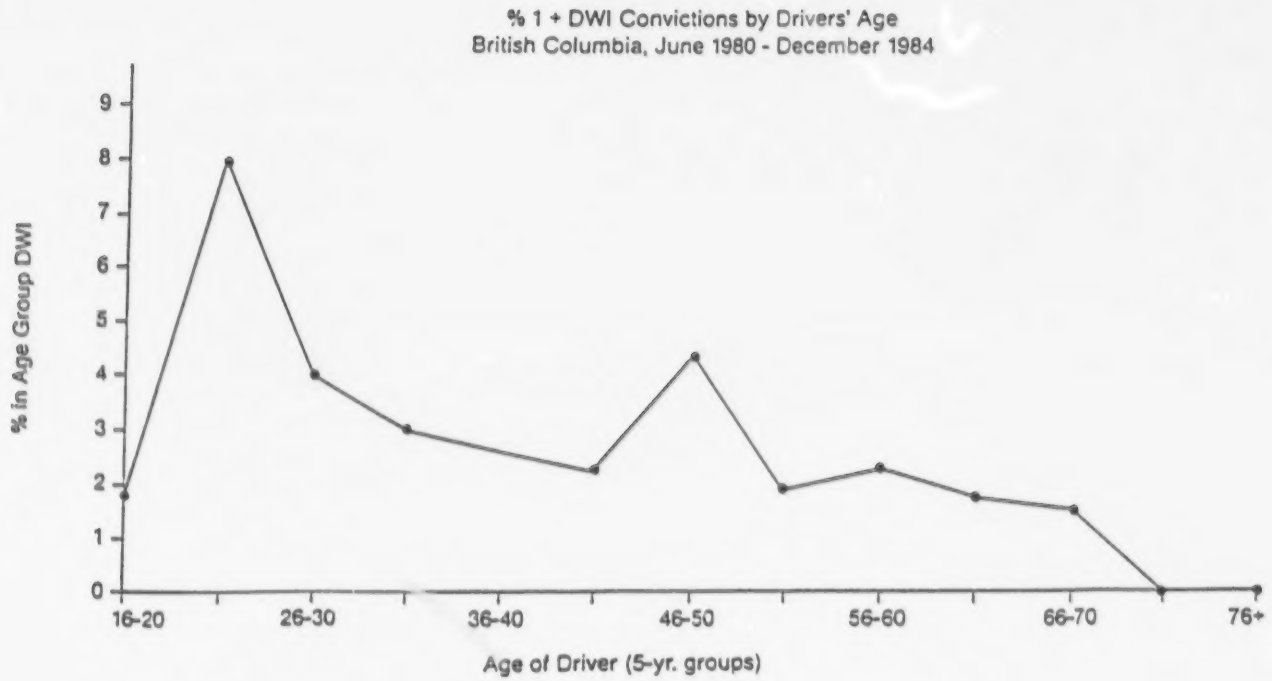
FIGURE 1



SECTION 3

PUBLIC ATTITUDES, KNOWLEDGE AND BEHAVIOURS REGARDING DRINKING DRIVING

A Summary of the Findings of:
A Survey of B.C. Population Attitudes, Knowledge and Behaviour Regarding Drinking Driving

A Summary of the Findings of:
A Survey of B.C. Population Attitudes, Knowledge and Behaviour Regarding Drinking Driving*

*This study was done under the direction of the

DRINKING DRIVING COUNTERATTACK PROGRAM

by

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SUMMARY

1. The sample as a whole considered drinking and driving to be a relatively serious problem in comparison to smoking, drug use, family violence, juvenile deliquency, pornography, racism, unemployment and AIDS. The majority felt that drinking and driving was as important or more important than any of these eight issues.

2. When asked if they agreed or disagreed with a list of things that could be done to reduce drinking and driving, a majority of the sample agreed with all the items on the list. The items attaining the highest percentage of agreement were, in order, including drinking and driving information in driver education, implementing more educational programs with regard to drinking and driving, having bars and taverns set up designated driver programs, having police set up more roadblocks, enforcing existing laws more strictly and establishing more treatment services for problem drinkers. Over 80% of the sample agreed or strongly agreed with all of these strategies.

3. When asked what the maximum legal penalties should be for a first time drinking and driving conviction, over three-quarters of the sample named a penalty that was in line with or was less severe than current British Columbia maximum legal penalties. Only 5.1% named penalties that were more severe than the actual maximum legal penalties.

However, for a first time conviction in which serious injury or death is involved, the sample named much harsher penalties than those named for a first time conviction involving no injuries or death. While over half thought that license suspension was still an appropriate penalty, most of those respondents thought the suspension should be for 3 years or more. Nearly one-quarter of the sample felt the driver should be given a jail sentence with 9.3% recommending sentences of 3 years or more.

4. While CounterAttack was the second most frequently named group or organization campaigning against drinking and driving (13.1%), it still falls far behind MADD, which was named by 53.5% of the sample.

5. When asked about the liklihood of certain consequences happening to a drinking driver, the respondents felt the driver was more likely to have an accident than to be pulled over by the police. On a scale of 0 to 10, where 0 means no chance of the event happening and 10 means it's certain to happen, the sample gave an average rating of only 3.02 for a drinking driver's chances of being pulled over by the police. Further, those respondents who had reported driving after drinking during the past month rated the chances even lower,at 2.64 as did passengers of drinking drivers who gave an average rating of 2.63.

6. The respondents were asked if they had done anything in the past month to avoid drinking and driving. Of the 97 respondents, who said they had done something to avoid drinking and driving, the most frequently given reason for so doing was that they felt it was wrong to drive while impaired (27.8%). This was true for drinking drivers and passengers of drinking drivers as well as the general population. The second most frequently given reason was fear of being in an accident (25.8%). Only 16.5% of the respondents who had done something to avoid drinking and driving gave fear of being caught by the police as a response. However, of the drinking drivers who had done something to avoid drinking and driving, fear of being caught by the police was the second most frequently given reason (22.6%).

7. 18.2% of the sample said that, within the past month, they had been a passenger in a vehicle in which the driver had been drinking. An analysis of the demographic characteristics of this group showed that passengers of drinking drivers tended to be younger than those who had not been passengers of drinking drivers. Sixty-three percent were under 36 years old compared to 37% of those who had not been passengers. A greater percentage of passengers were single (42.7% compared to 22.9% of those who had not been passengers) and currently working at a job or a business (82.7% compared to 62.0%). There was also a signigicant difference between passengers of drinking drivers and those who had not been passengers of drinking drivers with regard to income. Passengers were less likely to report a total household income of under $20,000 (11.9% compared to 27.6%) and more likely to report an income of over $60,000 (19.4% compared to 9.0%).

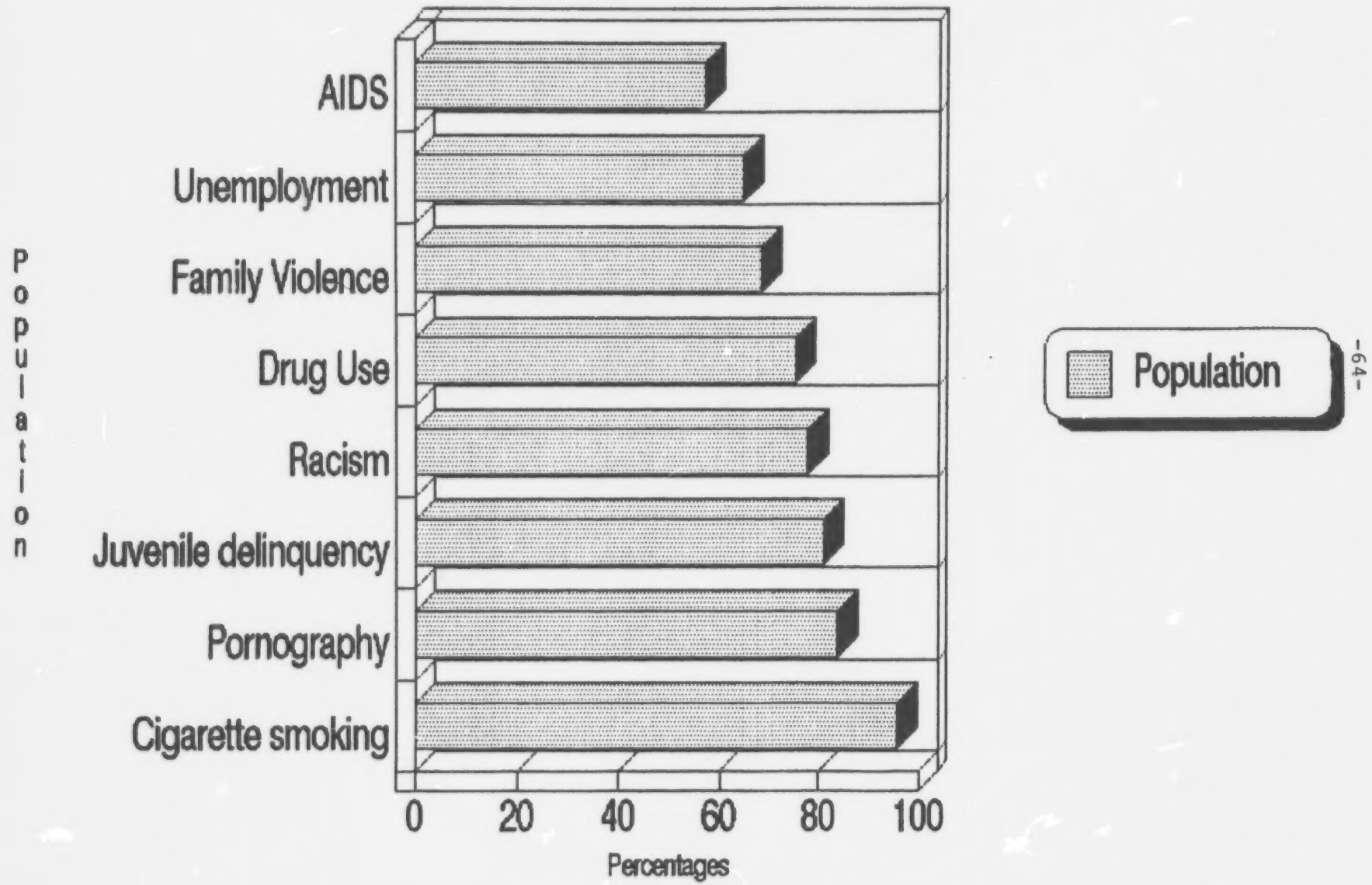
8. All respondents who said they had driven within the past month (N=368) were asked if, during the past month, they had been in a situation in which they had to drive after having more than two drinks. 15.7% said they had been in such a situation. The respondents who said they had driven after drinking were asked where they had been drinking, who they were drinking with, and what they were drinking. 44.0% said they were drinking in a bar, 39.2% said they were drinking with friends of both sexes and 68.0% said they were drinking beer. These results suggest a typical profile of a drinking and driving situation involves drinking beer with friends of both sexes in a bar.

Drinking drivers tended to be younger than drivers who did not drink and drive. Sixty-two percent of the drinking drivers were under 36 years of age compared to 38.2% of the drivers who did not drink and drive. Drinking drivers were also more likely to be male (67.2% compared to 51.5% of drivers who did not drink and drive).

A much higher proportion of drinking drivers were single (37.9% compared to 22.9% of the drivers who did not drink and drive). They were more likely to be currently employed or working at a

business (86.2% compared to 65.8%). This relationship is partly attributable to the age difference between drinking and drivers who did not drink and drive as 17.3% of the drivers who did not drink and drive were retired compared to only 3.4% of the drinking drivers.

9. In addition to finding similarities between drinking drivers and passengers of drinking drivers in terms of demographics, the survey also found that there was considerable overlap between the two groups. 48.3% of the drinking drivers said they had been a passenger of a drinking driver during the past month.


% Agreeing Drinking Driving is
As Important or More Important Than:
AIDS
Unemployment
Family Violence
Drug Use
Racism
Juvenile delinquency
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INTRODUCTION

The survey reported herein was designed to explore differences between (a) drinking drivers and drivers who did not drink and drive and (b) passengers of drinking drivers and those who had not been passengers of drinking drivers. Possible areas of differences investigated in the survey were (a) demographic factors, (b) attitudes with regard to drinking and driving, (c) past and present behaviour with regard to drinking and driving and (d) knowledge of groups campaigning against drinking and driving and other related issues.

The survey instrument was derived from the survey developed by the CounterAttack Program. It was modified to include additional questions regarding demographic characteristics of the sample and their attitudes, behaviour and knowledge with regard to drinking and driving (SEE APPENDIX).

The data were collected through interviews conducted during the two weeks prior to the initiation of the publicity for the Christmas 1988 police "blitz" enforcement roadcheck CounterAttack campaign (December 8 to January 3).

The survey involved a 20 to 30 minute telephone interview with 411 respondents over 15 years of age using an "enhanced" instrument (SEE APPENDIX) designed to investigate differences between drinking drivers and drivers who did not drink and drive and between passengers of drinking drivers and those who had not been passengers of drinking drivers. All respondents were randomly selected from the telephone accessible population of British Columbia. Sampling was achieved using a two stage panelling technique for selecting communities for inclusion in the sample and the communities were sampled according to their British Columbia population proportion. A sample of this size provides a confidence level of .05. Respondents were further randomized through use of a selection device (household resident with most recent birthday) at an early point in the interviewing process, in order to achieve a range of gender and age which is comparable to the actual population.

The survey was coded, validated and entered via SPSS-PC software. The data are described, having been analyzed by frequency of response, measures of central tendency, T-test and chi-square.

The analysis involved an investigation of province-wide patterns.

Information on the following matters were gathered:

1. Respondent (a) age, (b) marital status, (c) education, (d) work activity, (e) income, (f) type of community in

which they live and (g) gender;

2. Attitudes regarding the relative importance of the problem of drinking and driving;

3. Willingness to participate in anti-drinking driving campaign activities;

4. Approval of various strategies to reduce drinking driving;

5. Respondents' past and present behaviour with regard to reporting drinking drivers, participation in anti-drinking driving campaigns, being a passenger of a drinking driver, trying to prevent someone from drinking and driving, agreeing to be a designated driver, trying to avoid drinking and driving, and driving after drinking;

6. Driving after having used particular drugs or medication such as sleeping pills or tranquillizers, heart medication or insulin, over the counter drugs, marijuana or hashish and LSD, heroin or cocaine;

7. Respondents' history of involvement in motor vehicle accidents and drinking and driving history including 24 hour license suspensions and charges for drinking driving;

8. Driving behaviour such as swearing, passing cars, loss of temper, driving fast, making rude signs and weaving through traffic;

9. Awareness of groups campaigning against drinking driving;

10. Knowledge of the number of drinks one can have before the ability to drive is impaired and before one has reached the legal limit for drinking and driving;

11. Perceived likelihood of incurring specific consequences for drinking and driving; and

12. Knowledge and attitudes concerning the maximum and usual legal penalties for a first-time drinking driving conviction.

Summary of Findings

GENERAL POPULATION

1. Demographics

The results show the following distribution among age categories: 15.1% of the sample were under 26, 39.0% were between the ages of 26 and 40, 28.2% were between 41 and 60 and 17.8% were over 60 years old. The average age was 42.

The majority of the sample were currently married or living commonlaw (58.8%). Over one-quarter were single (26.5%), 10.3% were separated or divorced and 4.4% were widowed.

A plurality of the sample had achieved a high school diploma (31.8%) and another 30.0% had some college, some university, a college diploma or other training. Only 17.5% had a university degree while 20.7% had no schooling, elementary schooling or some high school.

The majority of the sample were currently working at a job or a business(65.8%). Nearly 17% were retired, 8.8% were either currently looking for work or enrolled as a student and 8.1% were keeping house.

With regard to total household income for 1988, a plurality of the sample made between $20,000 and $40,000 (38.4%). Twenty-six percent reported an income of between $40,000 and $60,000, 24.6% reported less than $20,000 and 10.9% reported making over $60,000.

The majority of the sample lived in a suburban community (57.6%). Thirty percent lived in an urban community and 12.2% lived in a rural community.

The majority of the sample were male (52.3%).

2. Attitudes

The sample was presented with eight issues; cigarette smoking, drug use, family violence, juvenile delinquency, pornography, racism, unemployment and AIDS, and asked whether, relative to these issues, they agreed or disagreed that drinking and driving was a more important problem. The results indicate that the sample viewed drinking and driving as a relatively important problem. A majority agreed it was as important or more important than all the issues they were presented with, in the following proportions; cigarette smoking (95.6%), drug use (75.4%), family violence (68.4%) juvenile delinquency (80.9%), pornography (83.8%), racism (77.9%), unemployment (64.8%) and AIDS (57.1%).

The sample was asked if they would be prepared to support or participate in activity in their community designed to reduce drinking and driving. A majority (53.8%) said they would be prepared.

The sample was presented with a list of things that could be done to reduce drinking and driving and asked if they agreed or disagreed with each of them. The list included more educational programs concerning drinking and driving, more roadblocks, stricter enforcement of existing laws, raising the drinking age, raising the driving age, more advertising against drinking and driving, more strictly controlling the sale of alcohol, providing free transportation to drinking drivers, having bars set up designated driver programs, including drinking and driving information in driver education and establishing more treatment services for problem drinkers.

A majority agreed with all the proposed strategies for reducing drinking and driving. The most popular strategies were including drinking driving information in driver education (97.8% agreed or strongly agreed), implementing more educational programs with regard to drinking and driving (91.4%), having bars and taverns set up designated driver programs (88.8%) and having police set up more roadblocks (85.8%). Over 80% of the sample also agreed or strongly agreed that there should be stricter enforcement of existing laws (83.5%) and that there should be more treatment services for problem drinkers (82.8%) The least popular strategies were raising the driving age (51.4%), raising the drinking age (51.8%) and more strictly controlling the sale of alcohol (53.8%).

The sample was asked their opinions of what the maximum legal penalties should be for a first drinking and driving conviction involving an accident but no injuries or death and for a first drinking and driving conviction involving an accident in which somebody was seriously hurt or killed.

With regard to their opinion of what the penalties should be for a first conviction in which no one is hurt or killed, a majority felt they should involve license suspension (57.6%). Over 30% felt the driver's license should be suspended from between 6 months to 3 years (32.4%). The second most frequently named penalty was a fine (22.5%). Only 3.7% of the sample thought that jail was an appropriate penalty.

The responses were then compared to what the maximum legal penalties are for a conviction of this type and classified as "correct" (naming one of the actual penalties), "less severe" and "more severe" than the actual penalties. Any one of the following responses were coded correct: license suspension from 6 months to 1 year, license suspension for 1

year and over, a fine of between $1000 and $5000, from 3 to 6 months in jail, a criminal record/court appearance for more than 5 points, and cancellation of auto insurance or increase in premiums. Forty percent of the sample named a penalty in the correct range while 36.3% named a less severe penalty. Only 5.1% named a penalty that was more severe than they are.

The respondents named more severe penalties for a first time conviction involving serious injury or death. Over half the sample thought that license suspension was still an appropriate penalty but recommended a longer period of suspension (32.8% felt the suspension should be for 3 years or more). Nearly one-quarter named jail as an appropriate penalty with 9.3% recommending sentences of 3 years or more.

3. Behaviour

Respondents were asked a number of questions regarding their past and present drinking and driving behaviour. When asked if, within the past month, they had been a passenger in a vehicle in which the driver had been drinking, less than one-fifth said they had (18.2%). Of those who had (N=75), 34.7% said the driver was their spouse or boy/girlfriend and 31.9% said the driver was a friend of the same sex. Nearly three-quarters of those who had been a passenger of a drinking driver did not feel they had been in any danger as a result. Those who were concerned about their safety were asked why they consented to be a passenger. The most frequently given response was a lack of alternative transportation (40.0%).

Just over one-quarter of the total sample had, at one time, reported a drinking driver to the police (27.1%). Only a very small percentage of the respondents said they were involved in any of the groups campaigning against drinking and driving (2.2%) or had participated in any campaign activity (1.5%).

The sample was asked if, during the past month, they had done anything to prevent someone from drinking and driving. The majority said they had not (77.9%). Those who had done something (N=91) were asked what relationship the person had to them and if their efforts were successful. A majority said the person was either a friend of the same sex (33.3%) or their spouse or boy/girlfriend (23.3%). The vast majority successfully prevented the person from driving (87.8%).

The sample was asked if they had driven within the past month and if they had driven during the past 3 years. Nearly 90% said they had driven during the past month (89.5%) while only 4.4% had not driven during the past 3 years. Those who had driven during the past month (N=368) were asked if they had been in a situation in which they had to drive after

having had more than two drinks. The results show only a small percentage of the drivers reported driving after drinking (15.7%). The most frequently given reason for doing so was not wanting to leave the car. The majority of the respondents who had driven after drinking reported they were drinking either in a bar (44.0%) or at someone else's home (32.0%). Nearly two-fifths of the drinking drivers had been drinking with friends of both sexes (39.2%) while another fifth were drinking with their spouse or boy/girlfriend (19.6%). A majority were drinking beer (68.0%). Slightly less than half the drinking drivers reported only drinking and driving once in the past month (47.1%). Just over 15% had driven 5 or more times after drinking.

When the respondents who said they had driven in the past month were asked if, in the past month, they had agreed to be the non-drinking driver for an occasion involving drinking, less than one-third said they had (27.2%).

These drivers were asked if they had done anything in the past month to avoid driving after drinking, if so, what they did and why they tried to avoid driving after drinking. Only 31.5% of the drivers said they had done something, the most commonly reported actions were taking a taxi, bus, subway or walking (7.9%) and asking someone else to drive (7.6%).

The most frequent reason given by those who had tried to avoid drinking and driving (N=97) was a belief it was wrong to drive while impaired (27.8%). More people were afraid of having an accident than of being caught by the police (25.8% compared to 16.5%). However, another 8.2% said they tried to avoid drinking and driving because they were afraid of losing their license or going to jail. Therefore, 24.7% of those who had tried to avoid drinking and driving did so out of fear of legal consequences (being caught by the police or losing their license or going to jail).

The drivers were asked if they had driven after using various types of drugs including prescription drugs such as sleeping pills, tranquillizers or anti-depressants; other prescription drugs such as heart medication, insulin or antibiotics, over-the-counter drugs such as codeine, antihistamines or cold medications; marijuana or hashish; and other drugs such as LSD, heroin, mescalin or cocaine. The results show few drivers driving after taking drugs or medication. The most commonly reported drug type used was over-the-counter drugs (23.8%). 14.1% said they drove after using prescription drugs such as heart medication, insulin or antibiotics, 3.0% said they drove after using marijuana or hashish and 2.2% said they drove after using prescription drugs such as sleeping pills, tranquillizers or antidepressants. No one reporting driving after using LSD, heroin, mescaline or cocaine.

Respondents who said they had driven within the past three years (N= 393) were asked three questions regarding their driving history over the past three years including have they ever had their license suspended for a drinking and driving offence, have they ever been charged with a drinking and driving offence and have they been in any accidents when they were driving. The results show that only a small percentage of the drivers reported having had their license suspended (2.7%), being charged with a drinking and driving offence (1.8%) or being in an accident (26.1%).

These drivers were presented with a number of statements about the way people drive and asked if they were true for them often, sometimes, seldom or never. The statements included "I swear out loud at other drivers", "I like to pass other cars on the highway even if I'm not in a hurry", "I lose my temper when driving", "Driving at high speeds is exciting", "I make rude signs at other drivers who annoy me", and "It is fun to manoeuvre and weave through traffic". A majority of the drivers reported that they seldom or never swear out loud (53.6%), like to pass other cars (81.6%), lose their temper (85.7%), like driving at high speeds (86.5%), make rude signs (93.8%) or enjoy weaving through traffic (95.9%).

4. Knowledge

The sample was asked if they could name any public or private groups, programs or organizations that campaigned against drinking and driving. MADD was the most frequently named group (53.5%), followed by CounterAttack (13.1%) and the police (9.5%).

The sample was asked how many drinks they think they can have before their ability to drive becomes impaired and before they are over the legal limit of .08 percent. A majority believed they would reach the level at which their ability to drive was impaired after having two or fewer drinks (63.8%). A smaller percentage believed they would exceed the legal limit of .08 percent after having two drinks or fewer (46.6%).

The sample was asked, on a scale of 0 to 10 where 0 means no chance and 10 means certainty, how likely it would be for a drinking driver to be in an accident, to be pulled over by the police and, if pulled over, to be charged with drinking and driving. The sample estimated, on average, that the likelihood of having an accident was 5.32, the likelihood of being pulled over by the police was 3.02 and the likelihood of being charged, if pulled over, was 5.87. Thus, the sample felt it was much more likely that a drinking driver would have an accident than that he would be pulled over by the police.

The sample was asked if they knew the maximum and usual legal penalties for a first drinking and driving conviction in which no one was injured or killed. Over fifty percent said they did not know what the maximum legal penalties were (52.1%). Nearly one-half thought the maximum legal penalties involved either a fine (21.7%) or license suspension (22.1%). Their responses were then compared with the actual penalties. One-fifth were able to name a correct penalty while 22.9% named a less severe penalty. Only one percent named a more severe penalty.

Over fifty percent said they knew the ususal penalties for a first drinking and driving conviction in which no one was injured or killed. (53.3%). One-quarter of the sample thought that license suspension was a usual penalty for a conviction of this type (25.8%) while 20.9% mentioned fines. Ten percent thought that the usual suspension was between 1 to 6 months and 14.1% thought the usual fine was between $101 and $1000.

DRINKING DRIVERS COMPARED TO DRIVERS WHO DID NOT DRINK AND DRIVE

Drinking drivers were defined as those persons who had driven a vehicle within the past month and who reported that they were in a situation during the past month in which they had to drive after having more than two drinks (N=58).

1. Demographics

Drinking drivers tended to be younger than drivers who did not drink and drive. Sixty-two percent of the drinking drivers were under 36 years of age compared to 38.2% of the drivers who did not drink and drive. Drinking drivers were also more likely to be male (67.2% compared to 51.5% of drivers who did not drink and drive).

A much higher proportion of drinking drivers were single (37.9% compared to 22.9% of the drivers who did not drink and drive). They were more likely to be currently employed or working at a business (86.2% compared to 65.8%). This relationship is partly attributable to the age difference between drinking drivers and drivers who did not drink and drive as 17.3% of the drivers who did not drink and drive were retired compared to only 3.4% of the drinking drivers.

2. Attitudes

Very few differences emerged in the attitudes of drinking drivers compared to drivers who did not drink and drive. Drinking drivers were more likely to believe that AIDS was a more important problem than drinking and driving (66.6% compared to 38.7% for drivers who did not drink and drive). This is probably related to the fact that drinking drivers were more likely to be young and single. They were also less likely to support stricter enforcement of anti-drinking driving laws (74.6% compared to 84.6% for drivers who did not drink and drive) and to support raising the driving age (38.6% compared to 52.8% of drivers who did not drink and drive). There were no significant differences between drinking drivers and drivers who did not drink and drive regarding their opinions on what the penalties should be for a first time drinking and driving conviction.

3. Behaviour

There were several significant differences between drinking drivers and drivers who did not drink and drive in terms of reported behaviour. Drinking drivers were far more likely to report having been a passenger of a drinking driver (48.3% compared to only 13.3% of drivers who did not drink and drive), they were more likely to report having tried to

prevent someone from driving after drinking (44.7% compared to 18.6%), they were more likely to report having done something to avoid driving after drinking (62.1% compared to 25.9%), they were more likely to report having driven after using marijuana or hashish (8.6% compared to 2.0%) and they were more likely to report having had their license suspended for drinking and driving (8.8% compared to 1.3%). A larger percentage of drinking drivers said they enjoyed passing cars than did drivers who did not drink and drive (31.0% compared to 16.5%) and reported losing their temper while driving (22.4% compared to 13.0%). Also compared to drivers who did not drink and drive, they said they liked to drive fast (22.4% compared to 11.6%) and weave through traffic (5.1% compared to 3.9%).

4. Knowledge

Drinking drivers and drivers who did not drink and drive did not differ significantly with regard to their own awareness of particular groups campaigning against drinking and driving, their estimation of the number of drinks one can have before reaching the legal limit for driving, their perception of the likelihood of various consequences of drinking and driving and their knowledge of penalties for drinking and driving. The two groups did differ significantly when asked how many drinks they can have before their ability to drive is impaired. Drinking drivers were more likely to estimate three or more drinks to impairment (66.2% compared to 29.9% of drivers who did not drink and drive).

PASSENGERS OF DRINKING DRIVERS COMPARED TO THOSE WHO HAD NOT BEEN PASSENGERS OF DRINKING DRIVERS

Passengers of drinking drivers were defined as those respondents who said that within the past month they had been a passenger in a vehicle in which the driver had had more than two drinks within a few hours prior to driving.

1. Demographics

Passengers of drinking drivers also tended to be younger than those who had not been passengers of drinking drivers. Sixty-three percent were under 36 years old compared to 37% of those who had not been passengers. A greater percentage of passengers were single (42.7% compared to 22.8% of those who had not been passengers) and currently working at a job or a business (82.7% compared to 62.0%). There was also a significant difference between passengers of drinking drivers and those who had not been passengers of drinking drivers with regard to income. Passengers were less likely to report a total household income of under $20,000 (11.9% compared to 27.6%) and more likely to report an income of over $60,000 (19.4% compared to 9.0%).

2. Attitudes

Like drinking drivers, passengers of drinking drivers were more likely to consider AIDS a more important problem than did those who had not been passengers of drinking drivers (56.8% thought it was more important than drinking and driving compared to 39.5% of those who had not been passengers). Passengers did not differ significantly from those who had not been passengers in terms of any of the other "Importance" questions. When asked their opinion of various strategies for reducing drinking and driving, passengers of drinking drivers were less likely to agree that the drinking age should be raised (39.2% compared to 54.6% for those who had not been passengers) and that the driving age should be raised (43.3% compared to 53.3%). These "attitude" differences may be partially due to the fact that passengers of drinking drivers tend to be younger than those who had not been passengers. There were no significant differences between the two groups with regard to their opinions concerning penalties for a first time drinking and driving conviction.

3. Behaviour

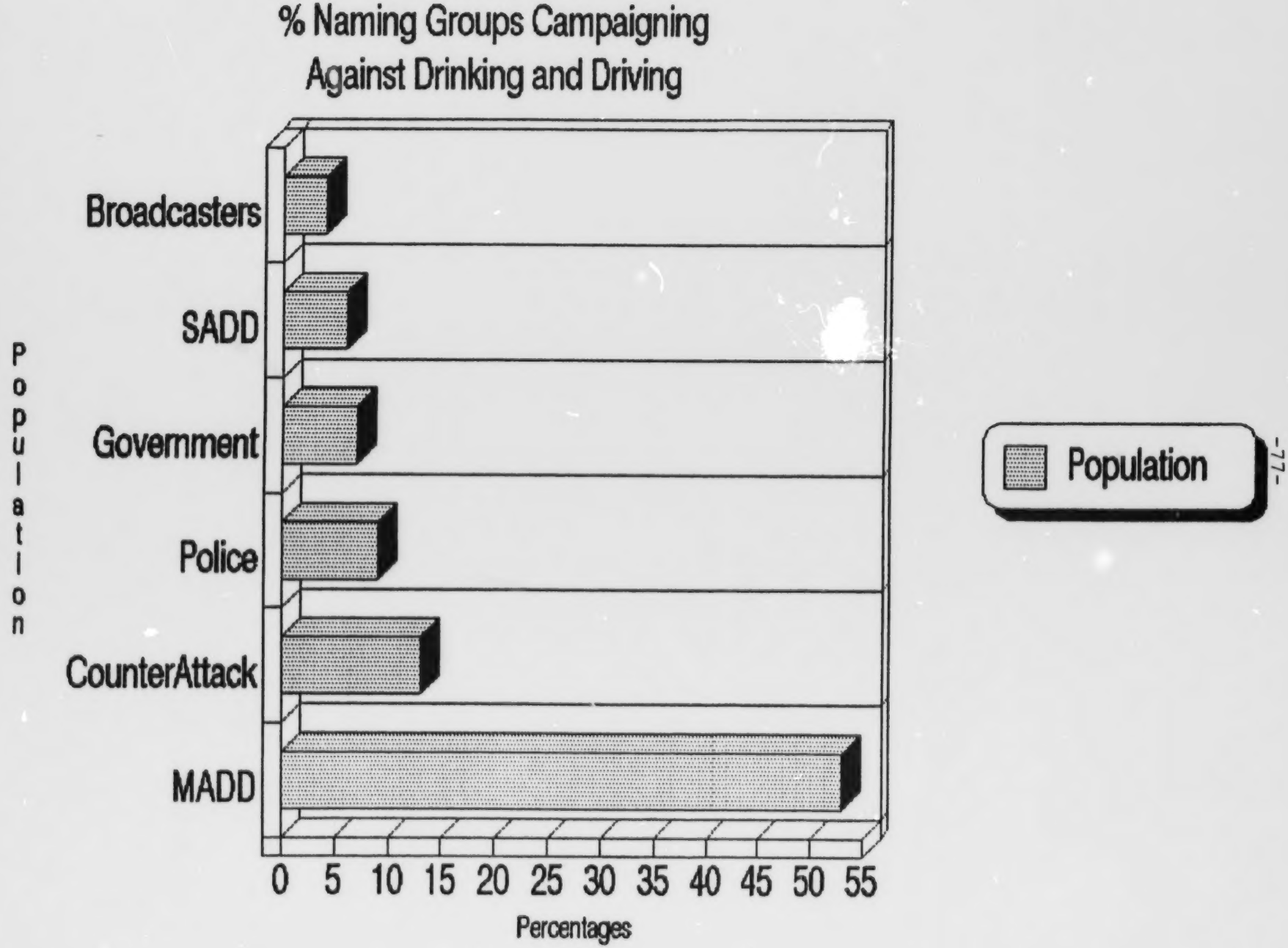
Passengers of drinking drivers differed significantly from those who had not been passengers of drinking drivers on several behaviour measures. Passengers were more likely to say they had reported a drinking driver to the police (40.0% compared to 24.3% of those who had not been passengers). They were also more likely to report having tried to prevent

someone from drinking and driving (46.7% compared to 16.7% of those who had not been passengers), having driven after drinking (40.6% compared to 10.1%), having done something to avoid driving after drinking (59.6% compared to 25.2%) and having driven after using marijuana or hashish (10.1% compared to 1.3%). When asked about their drinking and driving history, passengers were more likely to report having had their license suspended for 24 hours for a drinking and driving offence (7.1% compared to 1.6%) and having been charged with a drinking and driving offence (4.3% compared to 1.2%).

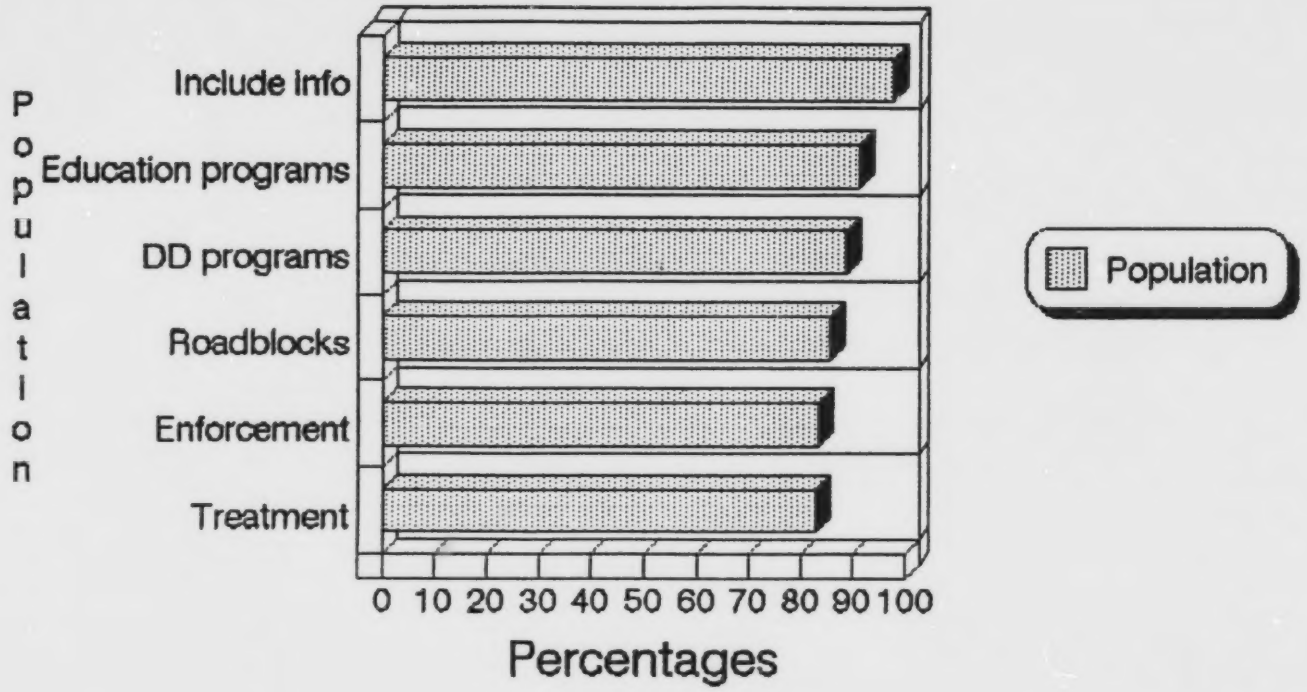
Passengers of drinking drivers also differed significantly from those who had not been passengers on several measures of driving behaviour. Passengers were more likely to report that they sometimes or often enjoy passing other cars on the highway (25.0% compared to 16.9%), often or sometimes lose their temper when driving (16.7% compared to 13.7%) and often or sometimes make rude signs at other drivers (11.1% compared to 5.1%).

4. Knowledge

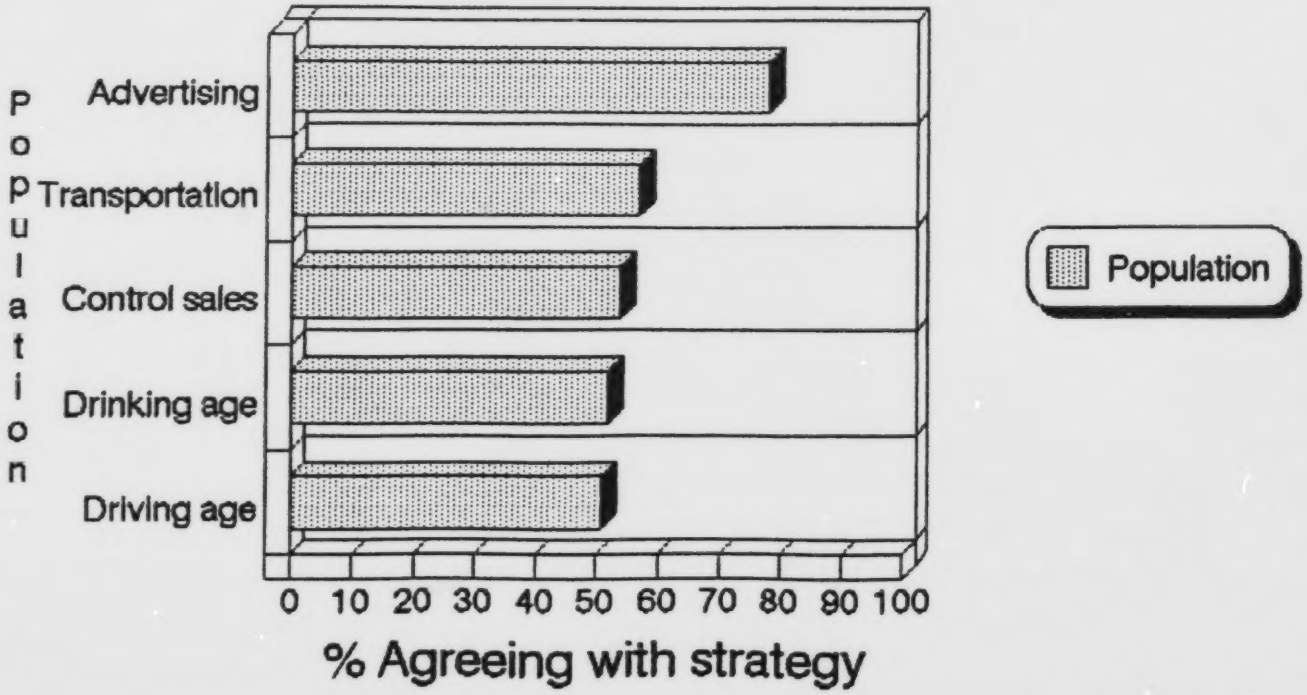
When asked if they could name a group or organization campaigning against drinking and driving, passengers of drinking drivers were more likely to name MADD than those who had not been passengers of drinking drivers (70.7% compared to 49.7%) and the government (13.3% compared to 5.1%). Passengers also differed significantly from those who had not been passengers when asked how many drinks they think they can have before their ability to drive becomes impaired. Forty-two percent of the passengers believed they would become impaired after two drinks or fewer compared to 69.3% of the those who had not been passengers. When asked for their estimation of the likelihood of a drinking driver getting in an accident, being pulled over by the police and being charged with drinking and driving, passengers of drinking drivers differed significantly from those who had not been passengers on two of the measures: having an accident and being charged with drinking and driving. On a scale of 0 to 10, where 0 is no chance and 10 is certainty, passengers of drinking drivers estimated the likelihood of both events as being somewhat lower than did those who had not been passengers (4.12 compared to 5.58 as the average likelihood of being in an accident and 5.21 compared to 6.03 as the average likelihood of being charged with a drinking and driving offence). There were no significant differences between the two groups with regard to their knowledge of penalties for a first time drinking and driving conviction.

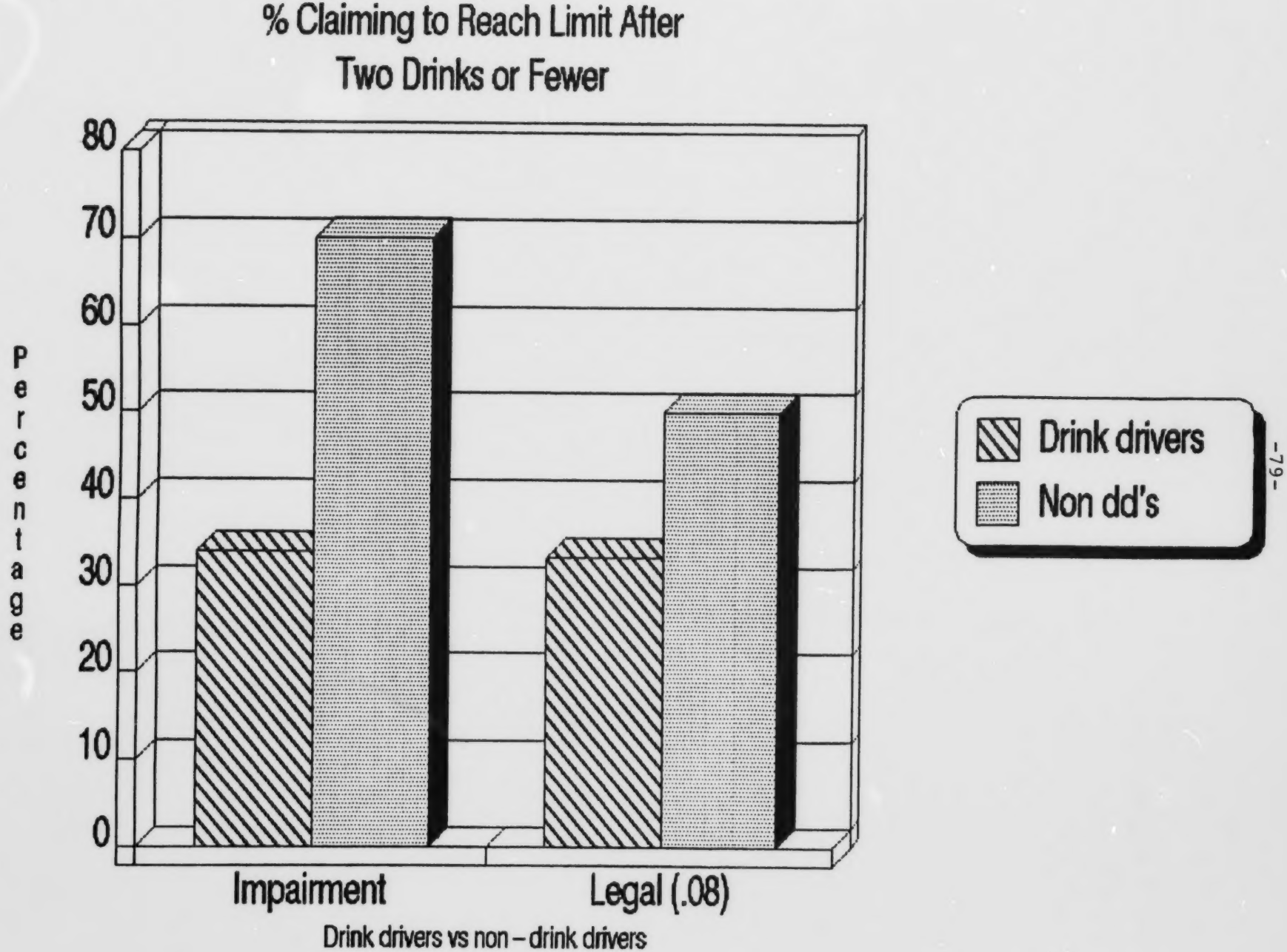

% Naming Groups Campaigning
Against Drinking and Driving
Broadcasters
SADD
Government
Police
CounterAttack
MADD
Population
0 5 10 15 20 25 30 35 40 45 50 55
Percentages
Population

Strategies for Reducing Drinking Driving
Respondents agreeing with strategies

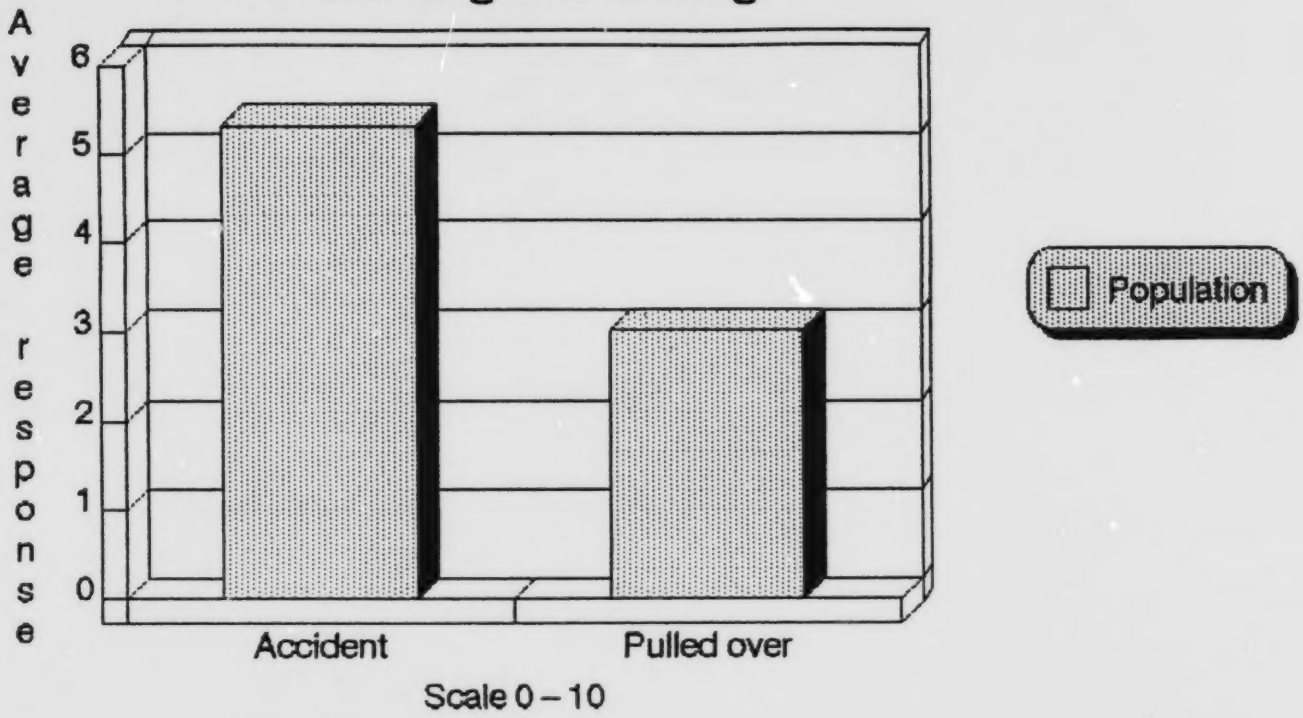


Strategies for Reducing Drinking Driving
Con't

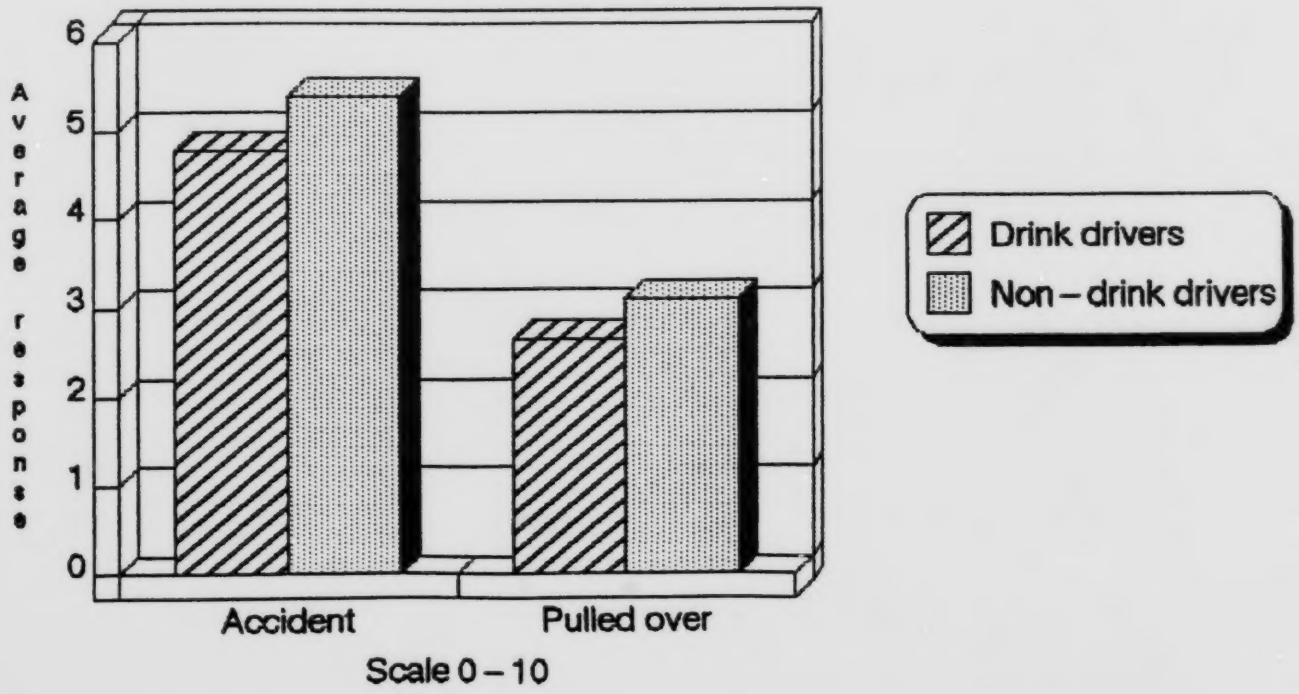



% Claiming to Reach Limit After
Two Drinks or Fewer
Percentage
80
70
60
50
40
30
20
10
0
Impairment
Legal (.08)
Drink drivers vs non – drink drivers
Drink drivers
Non dd's

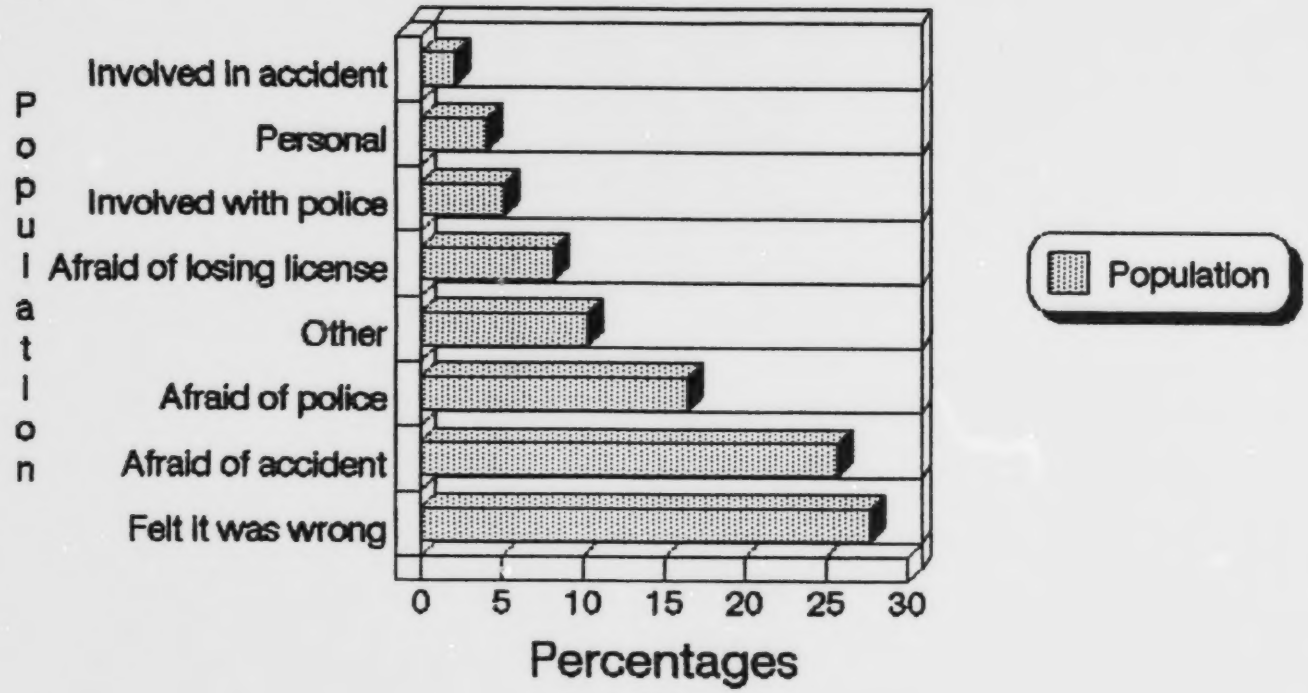
Average Likelihood of Consequences Of Drinking and Driving



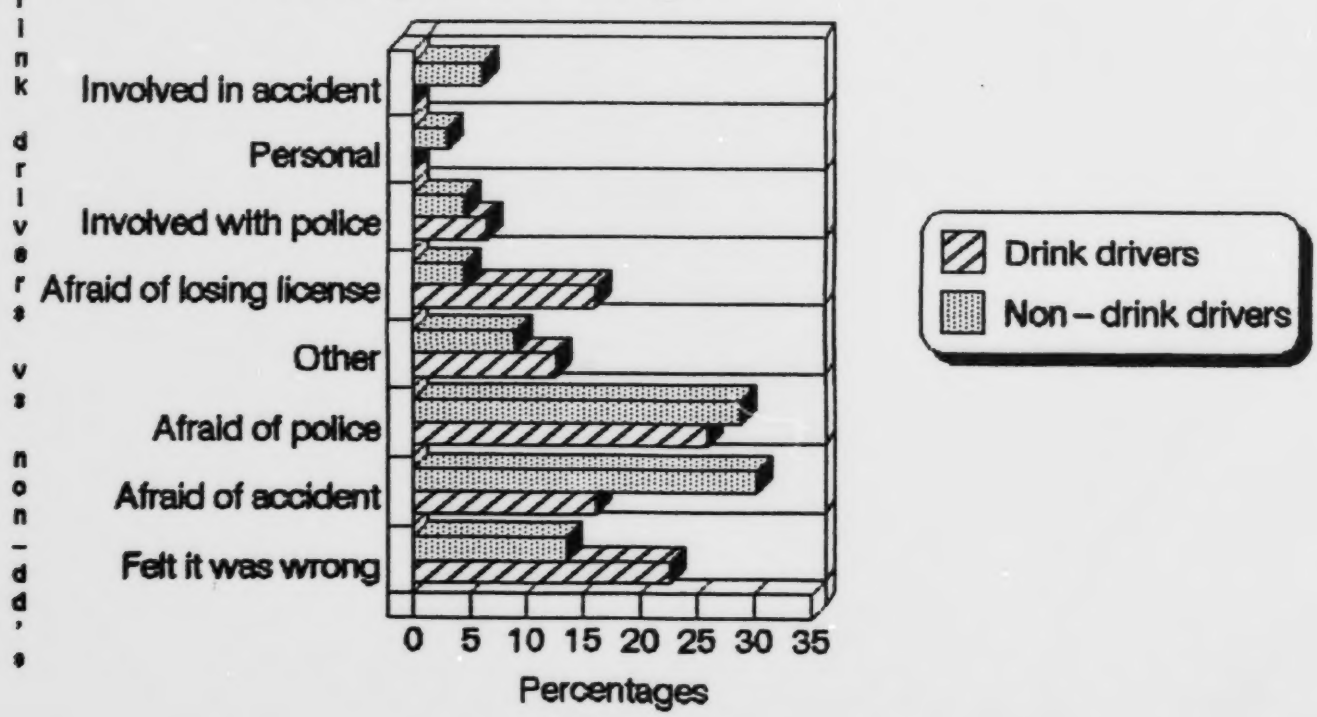
Average Likelihood of Consequences Of Drinking and Driving



Reasons for Avoiding Drinking and Driving

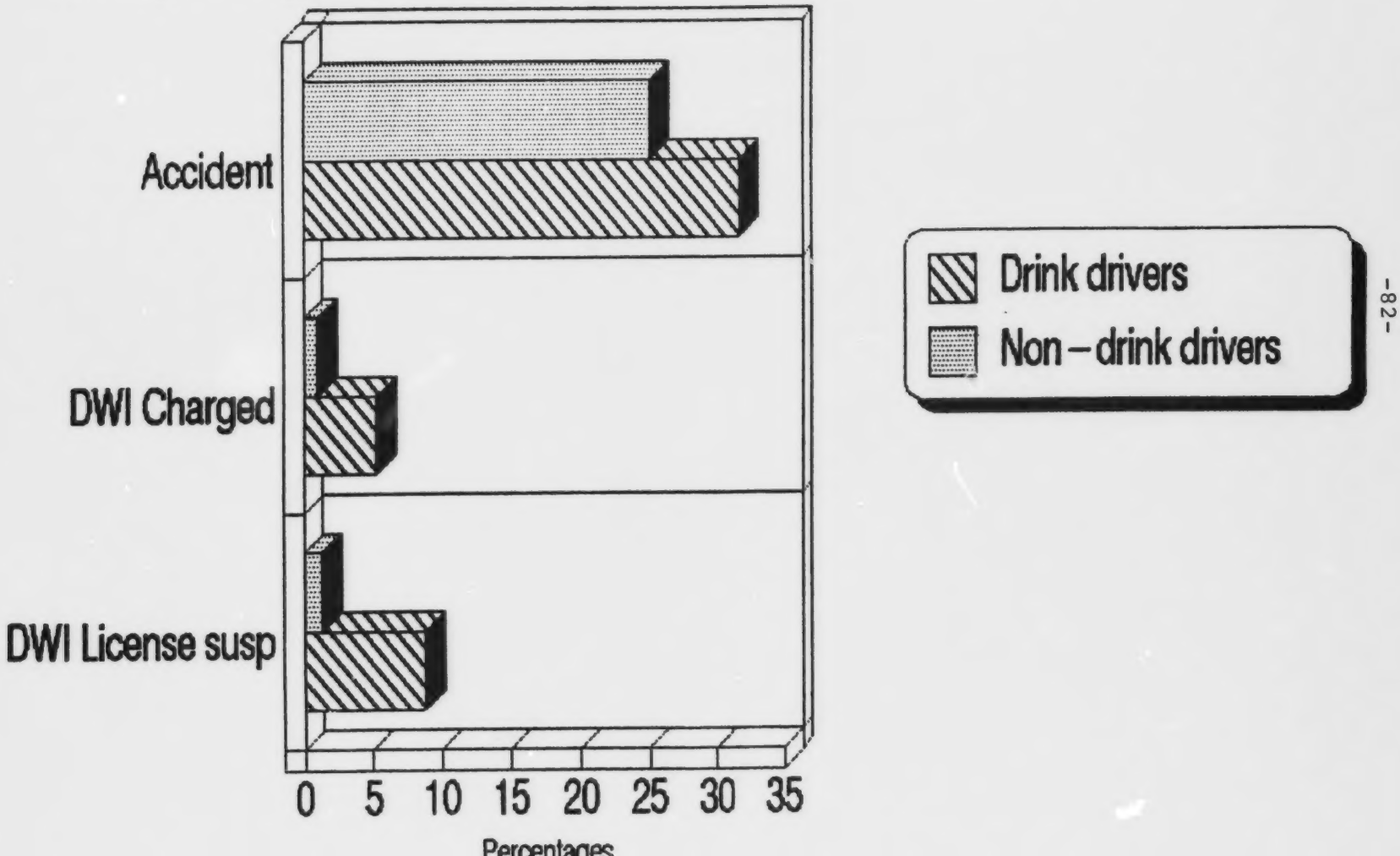


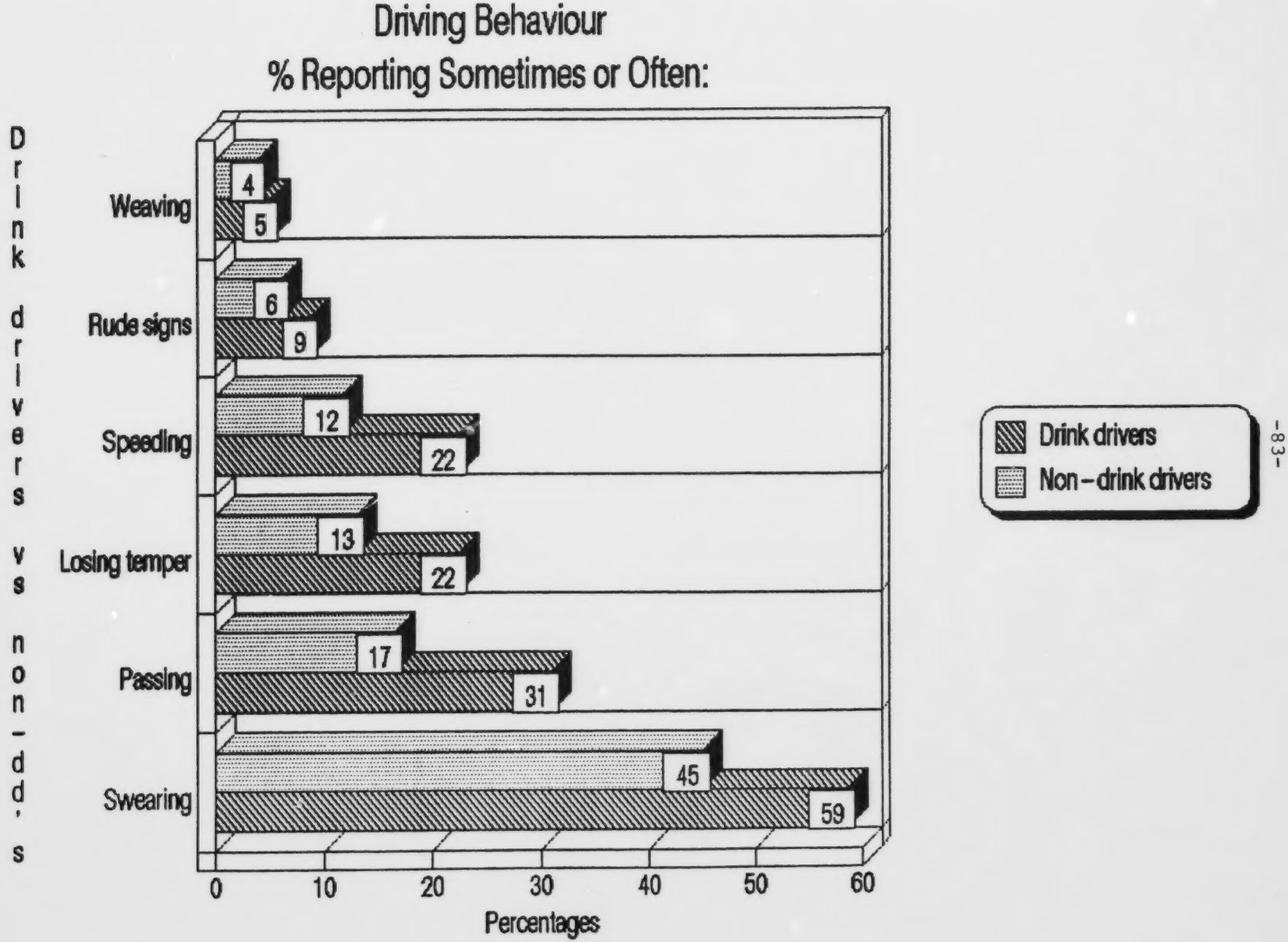
Reasons for Avoiding Drinking and Driving



Driving History

% Reporting the Following Events




Driving Behaviour
% Reporting Sometimes or Often:
Drink drivers vs non-dd's
Weaving
4
5
Rude signs
6
9
Speeding
12
22
Losing temper
13
22
Passing
17
31
Swearing
45
59
0
10
20
30
40
50
60
Percentages
Drink drivers
Non-drink drivers

[Q# 23: "Do you happen to know the maximum British Columbia penalties for a first drinking driving conviction involving an accident in which no persons have been injured or killed?"]

RESPONSE	POPULATION	DRINKING VS NON DRINKING DRIVERS		PASSENGERS VS NON-PASSENGERS	
	N=411	DD N=58	NON-DD N=309	PDD N=75	NON-PDD N=336
LICENSE SUSPENSION	22.1%	31.0%	22.0%	30.7%	20.2%
24 hrs to 1 week	1.0	1.7	0.6	1.3	0.9
8 days to 1 month	0.2	0.0	0.3	0.0	0.3
1 to 6 months	5.6	6.9	6.1	5.3	5.7
6 months to 3 yrs	13.6	19.0	13.3	22.7	11.6
3 years or more	0.7	0.0	1.0	0.0	0.9
Unspecified	1.0	3.5	0.6	1.3	0.9
FINE	21.7	31.0	21.7	24.0	21.1
$1 to $100	2.4	3.4	2.3	0.0	3.0
$101 to $1000	11.9	17.2	12.0	16.0	11.0
$1000 to $5000	5.8	10.3	5.8	6.7	5.7
$5000 or more	0.0	0.0	0.0	0.0	0.0
Unspecified	1.5	0.0	1.6	1.3	1.5
JAIL TERM	2.4	3.4	2.3	0.0	3.0
24 hrs to 14 days	0.0	0.0	0.0	0.0	0.0
2 wks to 3 mos	0.2	0.0	0.3	0.0	0.3
3 mos to 6 mos	1.7	1.7	1.6	0.0	2.1
6 mos to 3 yrs	0.5	1.7	0.3	0.0	0.6
3 yrs or more	0.0	0.0	0.0	0.0	0.0
Unspecified	0.0	0.0	0.0	0.0	0.0
POINTS	1.5	0.0	1.3	1.3	1.5
INSURANCE (cancellation or fee increase)	0.2	0.0	0.3	0.0	0.3
OTHER	0.0	0.0	0.0	0.0	0.0
DON'T KNOW	52.1	34.5	52.4	44.0	53.9
SIGNIFICANT DIFFERENCE		No	(.38)	No	(.53)
DEGREES OF FREEDOM			15		15
CHI-SQUARE			16.0		13.9

[Q# 27: "What do you think the maximum penalties for a first drinking driving conviction of this kind should be?"]

RESPONSE	POPULATION	DRINKING VS NON DRINKING DRIVERS		PASSENGERS VS NON-PASSENGERS	
	N=408	DD N=57	NON-DD N=307	PDD N=75	NON-PDD N=333
LICENSE SUSPENSION	57.6%	54.5%	59.0%	57.3%	57.7%
24 hrs to 1 week	2.0	5.3	1.6	1.3	2.1
8 days to 1 month	1.2	0.0	1.6	1.3	1.2
1 to 6 months	15.7	12.3	17.6	10.7	16.8
6 months to 3 yrs	32.4	35.1	30.9	41.3	30.3
3 years or more	3.9	0.0	4.9	0.0	4.8
Unspecified	2.5	1.8	2.3	2.7	2.4
FINE	23.5	29.8	23.1	25.3	23.1
$1 to $100	1.7	1.8	1.0	1.3	1.8
$101 to $1000	13.0	17.5	12.7	17.3	12.0
$1000 to $5000	6.4	10.5	6.5	6.7	6.3
$5000 or more	0.5	0.0	0.7	0.0	0.6
Unspecified	2.0	0.0	2.3	0.0	2.4
JAIL TERM	3.7	3.5	2.9	2.7	3.9
24 hrs to 14 days	0.7	0.0	0.7	0.0	0.9
2 wks to 3 mos	1.0	0.0	1.0	0.0	1.2
3 mos to 6 mos	0.7	3.5	0.0	0.0	0.9
6 mos to 3 yrs	0.2	0.0	0.3	0.0	0.3
3 yrs or more	0.0	0.0	0.0	0.0	0.0
Unspecified	1.0	0.0	1.0	2.7	0.6
POINTS	1.0	0.0	1.0	0.0	1.2
INSURANCE (cancellation or fee increase)	1.0	0.0	1.3	0.0	1.2
OTHER	4.7	1.8	5.2	2.7	5.1
DON'T KNOW	8.6	10.5	7.5	12.0	7.8
SIGNIFICANT DIFFERENCE		No	(.10)	No	(.38)
DEGREES OF FREEDOM			19		19
CHI-SQUARE			27.1		20.2

[Q# 29: "What do you think the maximum penalties should be for a first drinking and driving conviction involving an accident in which somebody was seriously hurt or killed?"]

RESPONSE	POPULATION	DRINKING VS NON DRINKING DRIVERS		PASSENGERS VS NON-PASSENGERS	
	N=408	DD N=57	NON-DD N=307	PDD N=75	NON-PDD N=333
LICENSE SUSPENSION	50.7%	59.6%	48.2%	52.0%	50.5%
24 hrs to 1 week	0.0	0.0	0.0	0.0	0.0
8 days to 1 month	0.2	0.0	0.0	0.0	0.3
1 to 6 months	1.5	1.8	1.6	2.7	1.2
6 months to 3 yrs	12.5	17.5	11.7	9.3	13.2
3 years or more	32.8	33.3	31.9	36.0	32.1
Unspecified	3.7	7.0	2.9	4.0	3.6
FINE	9.1	7.0	9.1	9.3	9.0
$1 to $100	0.0	0.0	0.0	0.0	0.0
$101 to $1000	3.2	1.8	3.6	1.3	3.6
$1000 to $5000	3.2	3.5	2.6	6.7	2.4
$5000 or more	1.7	1.8	1.6	0.0	2.1
Unspecified	1.0	0.0	1.3	1.3	0.9
JAIL TERM	23.3	19.3	25.1	28.0	22.2
24 hrs to 14 days	0.2	0.0	0.3	0.0	0.3
2 wks to 3 mos	0.2	0.0	0.3	0.0	0.3
3 mos to 6 mos	2.2	1.8	2.3	1.3	2.4
6 mos to 3 yrs	5.9	5.3	6.2	6.7	5.1
3 yrs or more	9.3	10.5	9.4	12.0	8.7
Unspecified	5.4	1.8	6.2	6.7	5.1
POINTS	1.0	1.8	0.7	0.0	1.2
INSURANCE (cancellation or fee increase)	1.2	3.5	1.0	2.7	0.9
OTHER	6.9	3.5	7.5	5.3	7.2
DON'T KNOW	7.8	5.3	8.5	2.7	9.0
SIGNIFICANT DIFFERENCE		No	(.33)	No	(.54)
DEGREES OF FREEDOM			6		18
CHI-SQUARE			6.85		16.7

[Q# 48: "During the past month, have you used any of the following drugs and then driven?"]

RESPONSE	POPULATION	DRINKING VS NON DRINKING DRIVERS		PASSENGERS VS NON-PASSENGERS	
	N=368	DD N=58	NON-D N=309	PDD N=69	NON-DD N=299
Prescription drugs such as sleeping pills, tranquillizers or anti-depressants	2.2%	3.4%	1.6%	0.0%	2.7%
Other prescription drugs such as heart medication, insulin or anti-biotics	14.1	12.1	14.0	13.0	14.4
Over-the-counter drugs such as codeine, anti-histamines or cold medications	23.8	24.1	23.7	24.6	23.6
Marijuana or hashish	3.0	8.6	2.0*	10.1	1.3***
Other drugs such as LSD, heroin, mescaline or cocaine	0.0	0.0	0.0	0.0	0.0

* Significant at the .05 level *** Significant at the .00 level

SECTION 4

TRAFFIC EPIDEMIOLOGY

Contributing Factors to Casualty Motor Vehicle Crashes by Police Jurisdiction. British Columbia, 1987.

The Number of Injuries and Deaths Associated with Alcohol-related Traffic Accidents by Police Jurisdiction. British Columbia, 1987.

Types and Locations of Casualty Motor Vehicle Crashes by Police Jurisdiction. British Columbia, 1987.

Canadian Criminal Code Traffic Charges by Police Jurisdiction. British Columbia, 1987.

Contributing Factors to Casualty Motor Vehicle Crashes by Police Jurisdiction. British Columbia, 1987.

CONTRIBUTING FACTORS TO CASUALTY MOTOR VEHICLE CRASHES IN BRITISH COLUMBIA, 1987

This report consists of a breakdown of selected contributing factors to casualty accidents (i.e. a crash where someone was injured or killed.) Each of the contributing factors was extracted from Traffic Accident Report forms (MV 104) which were submitted to the Motor Vehicle Department of the Ministry of Transportation and Highways by the police department/detachment servicing the location of the crash. It should be noted that as these computer-based files are constantly being updated by the Motor Vehicle Department, any figures produced by that department which contradict figures reported herein ought to be considered correct.

In order to interpret the information in this report, three things need to be kept in mind:

1) In most police departments/detachments, the actual number of casualty accidents is very small, so that a difference of one or two accidents can produce a very large percentage figure. Such large percentages based on a small number of accidents should not be taken as indicating any sort of trend or stable condition. They are most probably entirely random variations from police jurisdiction to police jurisdiction.

2) The contributing factors should be considered in the light of the provincial figures, and these are presented on the first page of this report.

3) Very often there is more than one contributing factor to an accident, therefore these figures can add up to more than 100%.

CONTRIBUTING FACTORS TO CASUALTY MOTOR VEHICLE CRASHES, 1987

LOCATION	No. of Crashes	% Dr. w/o Due Care	% Alcohol Rel'd	% Dr. Unsafe Speed	% Fail to Yield	% Due to Weather	% Fol. too Close	% Veh. Fault
BRITISH COLUMBIA - 1983	22,911	30.3	17.8	15.8	17.3	10.5	7.3	4.4
BRITISH COLUMBIA - 1984	23,440	29.1	15.2	15.2	17.5	11.1	7.5	4.2
BRITISH COLUMBIA - 1985	24,972	27.0	13.1	14.6	15.9	10.8	6.8	3.9
BRITISH COLUMBIA - 1986	28,948	27.8	13.0	15.0	16.9	9.4	7.4	3.5
BRITISH COLUMBIA - 1987	29,737	29.0	12.8	15.2	16.9	8.1	8.4	3.6
INDEPENDENT POLICE FORCES								
Central Saanich Police	78	29.5	14.1	9.0	9.0	9.0	5.1	7.7
Delta Municipal Police	471	33.3	13.0	11.7	21.9	11.9	10.0	2.1
Esquimalt Police Dept.	122	39.2	13.9	4.9	14.8	9.0	14.8	3.3
Matsqui Police Service	568	33.5	9.9	14.8	24.5	7.9	12.5	4.2
Nelson City Police	39	38.5	10.3	10.3	30.8	7.7	5.1	2.6
New Westminster Police	650	20.5	8.6	7.1	15.1	5.7	9.8	2.5
Oak Bay Police Dept.	75	21.3	5.3	2.7	22.7	2.7	8.0	5.3
Port Moody Police Dept.	154	41.6	7.1	16.2	15.6	10.4	16.2	5.8
Saanich Police Dept.	683	30.6	8.3	11.3	19.9	5.2	15.0	3.0
Vancouver City Police	4,866	14.2	7.5	6.6	21.4	4.0	3.6	2.0
Victoria City Police	893	30.1	12.1	8.3	23.4	3.5	10.8	3.0
W. Vancouver Police	338	32.5	10.7	16.3	15.1	9.5	9.8	5.3
FEDERAL AGENCIES								
Military Police	8	50.0	12.5	37.5	25.0	37.5	0.0	12.5
National Harbours Board Pol.	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0
ROYAL CANADIAN MOUNTED POLICE								
AUTONOMOUS DETACHMENTS								
Burnaby	1,715	30.4	8.5	12.5	25.7	5.1	9.9	2.2
Coquitlam Rural	98	15.3	7.1	7.1	3.1	5.1	7.1	3.1
Coquitlam Municipal	562	18.9	12.3	10.9	18.3	8.7	6.2	2.7
Port Coquitlam	525	21.8	17.5	13.1	13.5	11.9	7.9	3.2
North Vancouver City	365	47.7	10.1	10.7	26.0	11.0	20.5	3.0
North Vancouver District	385	54.0	7.8	14.8	23.4	9.9	18.4	4.2
Richmond Township	1,186	35.6	8.9	9.0	26.1	5.8	17.1	2.4
Surrey	2,273	21.7	12.8	10.1	17.8	8.2	8.5	2.3
CHILLIWACK SUB-DIVISION								
Abbotsford Rural	10	20.0	10.0	0.0	20.0	0.0	10.0	0.0
Abbotsford Municipal	166	34.3	13.3	14.5	13.3	7.8	8.4	3.6
Agassiz	75	36.0	25.3	45.3	9.3	13.3	0.0	5.3
Boston Bar	29	24.1	10.3	24.1	3.4	20.7	3.4	6.9
Chilliwack Rural	50	16.0	18.0	26.0	14.0	10.0	0.0	6.0
Chilliwack Municipal	372	23.7	11.3	12.4	16.1	5.0	8.6	3.0
Hope	150	30.7	12.7	27.3	0.7	22.0	3.3	10.7
Mission Rural	41	39.0	19.5	19.5	2.4	2.4	4.9	4.9
Mission Municipal	139	38.8	13.7	22.3	14.4	6.5	9.4	5.8
Sumas Freeway Unit C	114	22.8	11.4	14.9	3.5	5.3	3.5	12.3

LOCATION	No. of Crashes	% Dr. w/o Due Care	% Alcohol Rel'd	% Dr. Unsafe Speed	% Fail to Yield	% Due to Weather	% Fol. too Close	% Veh. Fault
COURTENAY SUB-DIVISION								
Alert Bay	4	25.0	0.0	25.0	0.0	0.0	0.0	0.0
Campbell River Rural	97	39.2	23.7	43.8	7.2	19.6	4.1	2.1
Campbell River Municipal	179	39.7	15.6	17.9	29.6	4.5	21.8	3.4
Comox Municipal	27	33.3	0.0	14.8	14.8	11.1	11.1	7.4
Courtenay Rural	182	33.5	23.6	25.8	4.9	12.1	4.9	5.5
Courtenay Municipal	122	33.6	13.9	13.9	29.5	8.2	12.3	6.6
Gold River	24	25.0	12.5	29.2	0.0	20.8	4.2	0.0
Parksville	164	39.6	23.8	28.7	8.5	3.0	8.5	3.0
Port Alberni Rural	71	32.4	21.1	54.9	5.6	7.0	1.4	2.8
Port Alberni Municipal	128	35.9	16.4	14.1	35.2	4.7	5.5	2.3
Port Alice	15	33.3	20.0	40.0	0.0	6.7	0.0	0.0
Port Hardy	71	18.3	16.9	22.5	5.6	25.4	4.2	5.6
Port McNeill	52	25.0	7.7	25.0	7.7	11.5	1.9	3.8
Powell River Rural	35	28.6	28.6	31.4	2.9	8.6	0.0	11.4
Powell River Municipal	58	44.8	15.5	19.0	13.8	5.2	1.7	13.8
Quadra Island	15	20.0	33.3	40.0	6.7	6.7	0.0	0.0
Sayward	27	29.6	14.8	14.8	7.4	22.2	0.0	3.7
Tahsis	12	25.0	25.0	41.7	8.3	0.0	0.0	0.0
Tofino	17	41.2	29.4	47.1	0.0	29.4	0.0	5.9
Ucluelet	43	32.6	14.0	41.9	0.0	23.3	0.0	2.3
Texada Island	5	60.0	40.0	20.0	0.0	20.0	0.0	0.0
KAMLOOPS SUB-DIVISION								
Alexis Creek	26	26.9	7.7	46.2	3.8	15.4	0.0	11.5
Anahim Lake	13	7.7	7.7	15.4	0.0	7.7	7.7	23.1
Ashcroft	36	30.6	19.4	16.7	0.0	11.1	0.0	8.3
Barriere	43	39.5	20.9	14.0	2.3	9.3	2.3	9.3
Chase	60	36.7	10.0	20.0	3.3	20.0	1.7	8.3
Clearwater	92	45.7	20.7	35.9	6.5	19.6	1.1	5.4
Clinton	55	12.7	9.1	20.0	5.5	18.2	1.8	5.5
100 Mile House	114	23.7	13.2	42.1	6.1	21.9	5.3	4.4
Kamloops Rural	83	42.2	24.1	39.8	0.0	3.6	0.0	3.6
Kamloops Municipal	633	43.9	15.0	13.4	19.3	3.8	16.1	3.0
Lillooet	59	27.1	18.6	23.7	3.4	5.1	3.4	3.4
Logan Lake	17	29.4	11.8	11.8	0.0	5.9	0.0	17.6
Lytton	33	15.2	21.2	39.4	6.1	15.2	0.0	12.1
Merritt Rural	120	30.8	22.5	25.8	2.5	5.8	0.0	4.2
Merritt Municipal	46	32.6	23.9	21.7	13.0	0.0	8.7	8.7
Spences Bridge	12	41.7	8.3	33.3	0.0	16.7	8.3	8.3
Valemount	59	28.8	16.9	23.7	1.7	22.0	0.0	11.9
Williams Lake Rural	133	45.9	18.0	27.8	3.8	10.5	3.8	8.3
Williams Lake Municipal	80	53.3	26.7	25.6	21.1	4.4	7.8	0.0
KELOWNA SUB-DIVISION								
Armstrong	71	35.2	14.1	28.2	5.6	21.1	1.4	1.4
Enderby	59	33.9	16.9	40.7	3.4	30.5	5.1	6.8
Falkland	22	40.9	9.1	31.8	0.0	31.8	4.5	0.0
Kelowna Rural	252	28.2	21.0	17.5	4.8	7.5	9.1	4.4
Kelowna Municipal	637	33.8	11.1	11.5	20.7	3.9	11.3	2.2

LOCATION	No. of Crashes	% Dr. w/o Due Care	% Alcohol Rel'd	% Dr. Unsafe Speed	% Fail to Yield	% Due to Weather	% Fol. too Close	% Veh. Fault
Keremeos	35	28.6	28.6	20.0	0.0	5.7	0.0	5.7
Lumby	45	26.7	24.4	28.9	2.2	11.1	2.2	13.3
Oliver	34	50.0	26.5	11.8	5.9	5.9	2.9	0.0
Osoyoos	47	40.4	19.1	19.1	0.0	10.6	6.4	14.9
Penticton Rural	84	32.1	21.4	23.8	8.3	9.5	10.7	3.6
Penticton Municipal	214	39.7	8.9	12.6	27.1	3.3	9.8	0.9
Princeton	108	33.3	18.5	45.4	0.9	11.1	1.9	7.4
Revelstoke	116	31.9	17.2	30.2	6.9	18.1	4.3	10.3
Salmon Arm Rural	47	25.5	14.9	44.7	6.4	17.0	2.1	8.5
Salmon Arm Municipal	86	25.6	25.6	15.1	17.4	11.6	8.1	3.5
Sicamous	52	19.2	15.4	25.0	1.9	11.6	3.8	7.7
Summerland Municipal	38	39.5	10.5	15.8	10.5	10.5	2.6	10.5
Vernon Rural	146	35.6	26.0	26.7	6.8	10.3	0.7	2.1
Vernon Municipal	220	27.7	7.3	11.4	29.5	4.5	5.0	3.2
NELSON SUB-DIVISION								
Castlegar Rural	59	28.8	15.3	15.3	8.5	11.9	5.1	5.1
Castlegar Municipal	46	32.6	17.4	8.7	13.0	4.3	23.9	8.7
Cranbrook Rural	65	29.2	15.4	24.6	4.6	23.1	4.6	6.2
Cranbrook Municipal	67	32.8	13.4	16.4	31.3	6.0	10.4	3.0
Crescent Valley	3	33.3	0.0	0.0	33.3	0.0	0.0	0.0
Creston	102	47.1	16.7	25.5	6.9	18.6	1.0	2.0
Elkford	14	14.3	7.1	0.0	0.0	28.6	0.0	0.0
Fernie	55	40.0	10.9	18.2	9.1	20.0	9.1	5.5
Field	12	16.7	8.3	8.3	0.0	41.7	0.0	0.0
Fruitvale	17	47.1	23.5	35.3	5.9	5.9	5.9	11.8
Golden	121	33.1	12.4	23.1	6.6	17.4	5.8	5.8
Grand Forks	69	40.6	17.4	29.0	11.6	10.1	8.7	8.7
Invermere	44	36.4	31.8	22.7	4.5	6.8	0.0	2.3
Kaslo	14	0.0	21.4	14.3	7.1	21.4	0.0	0.0
Kimberley Rural	25	32.0	20.0	12.0	4.0	12.0	0.0	8.0
Kimberley Municipal	17	47.1	17.6	17.6	0.0	29.4	0.0	11.8
Midway	40	50.0	20.0	25.0	2.5	17.5	2.5	2.5
Nakusp	44	25.0	13.6	9.1	4.5	15.9	0.0	6.8
Nelson	59	35.6	22.0	42.4	1.7	28.8	6.8	3.4
New Denver	14	71.4	35.7	28.6	0.0	14.3	0.0	0.0
Radium	33	15.2	15.2	12.1	0.0	27.3	0.0	3.0
Rossland	21	42.9	9.5	23.8	28.6	14.3	4.8	0.0
Salmo	27	18.5	18.5	18.5	0.0	14.8	3.7	3.7
Sparwood	44	47.7	11.4	20.5	11.4	22.7	0.0	6.8
Trail Rural	23	39.1	4.3	21.7	8.7	26.1	13.0	13.0
Trail Municipal	40	32.5	10.0	17.5	17.5	7.5	5.0	7.5
PRINCE GEORGE SUB-DIVISION								
Burns Lake	42	19.0	23.8	16.7	7.1	21.4	4.8	4.8
Chetwynd	58	20.7	17.2	39.7	1.7	19.0	1.7	1.7
Dawson Creek Rural	68	25.0	14.7	26.5	2.9	10.3	10.3	4.4
Dawson Creek Municipal	61	32.8	19.7	21.3	23.0	4.9	3.3	4.9
Fort Nelson	51	29.4	11.8	11.8	3.9	15.7	0.0	7.8
Fort St. James	35	37.1	37.1	31.4	5.7	11.4	0.0	5.7

LOCATION	No. of Crashes	% Dr. w/oDue Care	% Alcohol Rel'd	% Dr. Unsafe Speed	% Fail to Yield	% Due to Weather	% Fol. too Close	% Veh. Fault
Fort St. John Rural	105	29.5	14.3	23.8	4.8	14.3	2.9	3.8
Fort St. John Municipal	67	22.4	11.9	9.0	34.3	3.0	9.0	7.5
Fraser Lake	23	21.7	34.8	17.4	0.0	17.4	0.0	8.7
Hudson Hope	9	11.1	22.2	22.2	0.0	11.1	0.0	11.1
Mackenzie Rural	32	15.6	15.6	21.9	3.1	9.4	0.0	9.4
Mackenzie Municipal	17	35.3	11.8	11.8	5.9	5.9	0.0	0.0
McBride	31	25.8	12.9	25.8	0.0	25.8	0.0	6.5
Prince George Rural	165	17.6	14.5	18.8	1.2	15.2	1.2	4.2
Prince George City	493	42.0	19.3	21.5	15.8	12.2	8.7	2.6
Quesnel Rural	142	31.0	15.5	23.2	7.0	9.9	2.1	8.5
Quesnel Municipal	108	32.4	16.7	11.1	12.0	1.9	16.7	2.8
Tumber Ridge	21	28.6	28.6	23.8	4.8	23.8	4.8	0.0
Vandernoof	53	43.4	22.6	7.5	5.7	13.2	1.9	7.5
Watson Lake, Teslin	17	35.3	17.6	23.5	0.0	17.6	0.0	0.0
Wells	7	71.4	0.0	42.9	0.0	14.3	14.3	0.0
PRINCE RUPERT SUB-DIVISION								
Atlin	7	14.3	28.6	28.6	0.0	28.6	14.3	0.0
Bella Bella	1	100.0	100.0	0.0	0.0	0.0	0.0	0.0
Bella Coola	18	44.0	27.8	11.1	0.0	5.6	0.0	0.0
Cassiar	16	25.0	18.8	31.3	0.0	12.5	12.5	0.0
Dease Lake	16	31.3	25.0	18.8	6.3	18.8	0.0	6.3
Granisle	6	50.0	33.3	33.3	16.7	0.0	0.0	0.0
Hazelton	78	25.6	34.6	29.5	2.6	21.8	0.0	3.8
Houston	31	19.4	12.9	19.4	6.5	9.7	0.0	25.8
Kitimat Rural	17	41.2	11.8	23.5	11.8	47.1	0.0	5.9
Kitimat Municipal	31	54.8	25.8	22.6	6.5	19.4	6.5	3.2
Masset	24	33.3	37.5	29.2	4.2	12.5	0.0	8.3
New Aiyansh	14	14.3	21.4	14.3	0.0	7.1	0.0	14.3
Prince Rupert Rural	19	31.6	26.3	31.6	0.0	47.4	0.0	10.5
Prince Rupert City	77	26.0	19.5	19.5	26.0	14.3	3.9	2.6
Queen Charlotte	25	32.0	36.0	36.0	0.0	16.0	0.0	0.0
Smithers	65	33.8	32.3	32.3	7.7	9.2	6.2	4.6
Stewart	34	38.2	17.6	23.5	5.9	32.4	2.9	0.0
Terrace Rural	96	27.1	28.1	29.2	5.2	28.1	0.0	8.3
Terrace Municipal	63	31.7	19.0	25.4	17.5	4.8	0.0	3.2
VANCOUVER SUB-DIVISION								
Gibsons	68	26.5	33.8	38.2	7.4	10.3	8.8	2.9
Langley City	248	31.0	12.5	12.9	22.6	5.2	10.1	2.8
Langley Township	502	31.1	12.9	20.7	21.5	9.0	8.8	4.2
Maple Ridge Rural	78	53.8	15.4	26.9	14.1	7.7	6.4	1.3
Maple Ridge Municipal	332	50.3	14.2	18.1	15.7	5.1	11.4	4.8
Pemberton	39	17.9	10.3	23.1	2.6	2.6	0.0	5.1
Sechelt	66	22.7	22.7	31.8	9.1	18.2	3.0	6.1
Squamish Rural	78	42.3	17.9	35.9	1.3	6.4	5.1	3.8
Squamish Municipal	94	28.7	23.4	20.2	10.6	5.3	5.3	3.2
University	85	25.9	4.7	16.5	32.6	21.2	5.9	5.9
Vancouver-Bowen Island	11	9.1	18.2	0.0	0.0	9.1	9.1	9.1
Whistler	61	34.4	18.0	39.3	4.9	24.6	8.2	8.2

LOCATION	No. of Crashes	% Dr. w/oDue Care	% Alcohol Rel'd	% Dr. Unsafe Speed	% Fail to Yield	% Due to Weather	% Fol. too Close	% Veh. Fault
White Rock	117	29.9	12.0	10.3	21.4	3.4	9.4	7.7
Deas Isle Freeway Patrol (Unit A)	205	38.0	11.2	14.6	5.4	9.3	25.4	5.4
Port Mann Freeway Patrol (Unit B)	458	33.8	10.9	18.6	1.3	7.4	21.4	3.1
VICTORIA SUB-DIVISION								
Chemainus - N. Cowichan	62	25.8	17.7	22.6	9.7	11.3	4.8	12.9
Colwood	310	44.8	18.1	25.8	15.8	8.1	12.3	6.1
Duncan	161	39.8	15.5	23.6	14.3	5.6	10.6	3.7
Duncan - N. Cowichan	101	43.6	20.8	28.7	16.8	9.9	6.9	5.9
Gabriola Island	26	19.2	30.8	30.8	3.8	7.7	3.8	7.7
Ganges	36	33.3	22.2	36.1	2.8	13.9	2.8	8.3
Ladysmith	76	34.2	18.4	22.4	15.8	11.8	5.3	5.3
Lake Cowichan	26	42.3	26.9	30.8	7.7	15.4	0.0	7.7
Nanaimo Rural	61	42.6	11.5	21.3	3.3	8.2	9.8	3.3
Nanaimo Municipal	518	23.7	12.9	18.5	19.3	7.3	12.7	3.7
Pender Island	16	18.8	25.0	50.0	6.3	6.3	0.0	0.0
Shawnigan Lake	101	32.7	16.8	24.8	5.0	9.9	5.9	4.0
Sidney Rural	8	50.0	37.5	37.5	12.5	12.5	0.0	12.5
Sidney Municipal	111	30.6	16.2	15.3	23.4	3.6	10.8	5.4
Sooke	96	35.4	20.8	36.5	6.3	13.5	6.3	9.4

The Number of Injuries and Deaths Associated with Alcohol-related Traffic Accidents by Police Jurisdiction.
British Columbia, 1987.

THE NUMBER OF INJURIES AND DEATHS ASSOCIATED WITH DRINKING DRIVING BY POLICE JURISDICTION. BRITISH COLUMBIA, 1987.

Traffic accidents that produce injury or death are investigated by the police in British Columbia, and in the process of investigation, the officers judge whether or not the accident was caused by the driver(s) being impaired. These judgements are recorded on the Traffic Accident Investigation Form (MV104) and are compiled into computer-readable data by the Motor Vehicle Division of the Ministry of Transportation and Highways (B.C.)

This report lists, for each police reporting jurisdiction, the number of persons injured in 1985 and the percentage of those who were injured in alcohol-related traffic accidents (as taken from the MV104). In addition, similar information is presented for fatalities. It should be noted that as these computer-based files are constantly being updated by the Motor Vehicle Department, any figures produced by that department which contradict figures reported herein ought to be considered correct.

In order to interpret the information in this report, three things need to be kept in mind:

1) In most police departments/detachments, the actual number of accidents is very small, so that a difference of one or two accidents can produce a very large percentage figure. Such large percentages based on a small number of accidents should not be taken as indicating any sort of trend or stable condition. They are most probably entirely random variations from police jurisdiction to police jurisdiction.

2) This information should be considered in the light of the provincial figures, and these are presented on the first page of this report.

THE NUMBER OF INJURIES AND DEATHS ASSOCIATED WITH DRINKING DRIVING BY POLICE JURISDICTION: BRITISH COLUMBIA, 1987

LOCATION	Total # persons injured	# Injured Alcohol Related	Total # persons killed	# Killed Alcohol Related
BRITISH COLUMBIA - 1985	34,371	4,954 (14.4%)	483	144 (29.8%)
BRITISH COLUMBIA - 1986	40,378	5,688 (14.0%)	599	210 (35.1%)
BRITISH COLUMBIA - 1987	41,255	5,736 (13.9%)	622	231 (37.1%)
INDEPENDENT FORCES				
Central Saanich Police	104	13	2	1
Delta Municipal Police	647	91	4	1
Esquimalt Police Dept.	156	24	0	0
Matsqui Police Service	814	81	8	4
Nelson City Police	52	5	0	0
New Westminster Police	892	93	2	1
Oak Bay Police Dept.	82	6	1	1
Port Moody Police Dept.	215	15	1	0
Saanich Police Dept.	854	76	4	1
Vancouver City Police	6,357	504	37	12
Victoria City Police	1,132	141	8	1
West Vancouver Police Dept.	460	46	1	0
FEDERAL AGENCIES				
Military Police	8	1	1	0
National Harbours Board Police	1	0	0	0
ROYAL CANADIAN MOUNTED POLICE				
AUTONOMOUS DETACHMENTS				
Burnaby	2,304	221	16	4
Coquitlam Rural	144	12	2	2
Coquitlam Municipal	766	89	4	3
Port Coquitlam	353	64	6	2
North Vancouver City	443	51	2	0
North Vancouver District	513	41	2	2
Richmond Townsnip	1,595	163	17	7
Surrey	3,368	484	31	12
CHILLIWACK SUB-DIVISION				
Abbotsford Rural	16	1	0	0
Abbotsford Municipal	242	41	2	1
Agassiz	107	31	5	1
Boston Bar	33	1	7	2
Chilliwack Rural	88	14	3	0
Chilliwack Municipal	487	69	3	1
Hope	231	27	19	3
Mission Rural	54	12	3	0
Mission Municipal	186	32	3	0
Sumas Freeway Patrol (Unit C)	176	20	10	3

(1987)

LOCATION	Total # persons injured	# Injured Alcohol Related	Total # persons killed	# Killed Alcohol Related
COURTENAY SUB-DIVISION				
Alert Bay	5	0	0	0
Campbell River Rural	163	36	8	4
Campbell River Municipal	244	38	1	1
Comox Municipal	35	0	0	0
Courtenay Rural	267	67	3	2
Courtenay Municipal	160	22	2	1
Gold River	32	4	0	0
Parksville	255	57	4	2
Port Alberni Rural	111	20	5	4
Port Alberni Municipal	162	28	3	1
Port Alice	22	3	0	0
Port Hardy	97	17	1	0
Port McNeill	81	8	1	0
Powell River Rural	53	14	3	1
Powell River Municipal	76	12	1	1
Quadra Island	17	5	0	0
Sayward	44	5	0	0
Tansis	16	5	0	0
Tofino	22	7	0	0
Ucluelet	68	14	4	0
Texada Island	9	4	0	0
KAMLOOPS SUB-DIVISION				
Alexis Creek	32	4	2	0
Anahim Lake	18	1	0	0
Ashcroft	61	11	3	2
Barriere	66	14	3	2
Chase	84	9	2	0
Clearwater	138	27	7	2
Clinton	92	5	3	1
100 Mile House	158	25	3	0
Kamloops Rural	135	32	6	2
Kamloops Municipal	901	149	15	9
Lillooet	89	19	8	4
Logan Lake	26	2	1	0
Lytton	54	9	7	6
Merritt Rural	187	48	5	3
Merritt Municipal	61	19	0	0
Spences Bridge	15	3	0	0
Valemount	86	17	2	0
Williams Lake Rural	189	38	8	3
Williams Lake Municipal	128	35	0	0
KELOWNA SUB-DIVISION				
Armstrong	105	16	2	1
Enderby	85	16	1	0
Falkland	45	2	2	0
Kelowna Rural	352	79	7	2
Kelowna Municipal	846	104	8	2

(1987)

LOCATION	Total # persons injured	# Injured Alcohol Related	Total # persons killed	# Killed Alcohol Related
Keremeos	47	17	4	1
Lumby	49	10	4	2
Oliver	512	14	4	1
Osoyoos	69	10	1	1
Penticton Rural	123	27	2	2
Penticton Municipal	277	26	4	1
Princeton	178	32	8	3
Revelstoke	165	24	5	2
Salmon Arm Rural	64	13	1	0
Salmon Arm Municipal	132	35	2	1
Sicamous	83	10	3	1
Summerland Municipal	45	4	3	1
Vernon Rural	204	54	18	10
Vernon Municipal	286	20	2	0
NELSON SUB-DIVISION				
Castlegar Rural	93	20	2	1
Castlegar Municipal	56	8	0	0
Cranbrook Rural	112	19	1	0
Cranbrook Municipal	88	17	2	1
Crescent Valley	5	0	0	0
Creston	144	24	8	2
Elkford	22	2	0	0
Fernie	78	10	6	3
Field	16	2	0	0
Fruitvale	27	4	0	0
Golden	199	32	7	3
Grand Forks	99	19	1	1
Invermere	74	24	0	0
Kaslo	24	4	0	0
Kimberley Rural	41	9	1	1
Kimberley Municipal	21	4	1	1
Midway	54	12	7	2
Nakusp	62	8	4	1
Nelson	71	16	3	0
New Denver	17	6	1	0
Radium	47	4	1	1
Rossland	34	3	1	0
Salmo	34	6	0	0
Sparwood	56	8	3	1
Trail Rural	30	1	1	0
Trail Municipal	53	12	0	0
PRINCE GEORGE SUB-DIVISION				
Burns Lake	68	25	1	0
Chetwynd	108	24	1	1
Dawson Creek Rural	100	16	1	1
Dawson Creek Municipal	77	15	2	0
Fort Nelson	70	9	3	1
Fort St. James	54	22	2	2

(1987)

LOCATION	Total # persons injured	# Injured Alcohol Related	Total # persons killed	# Killed Alcohol Related
Fort St. John Rural	148	24	3	2
Fort St. John Municipal	101	14	0	0
Fraser Lake	30	9	3	3
Hudson Hope	12	4	2	1
Mackenzie Rural	44	8	2	1
Mackenzie Municipal	20	3	0	0
McBride	36	6	2	1
Prince George Rural	246	46	12	1
Prince George City	654	137	9	6
Quesnel Rural	214	38	3	0
Quesnel Municipal	141	23	2	0
Tumbler Ridge	30	12	0	0
Vanderhoof	72	19	2	1
Watson Lake, Teslin	26	3	2	0
Wells	12	0	1	0
PRINCE RUPERT SUB-DIVISION				
Atlin	10	3	0	0
Bella Bella	0	0	1	1
Bella Coola	27	9	0	0
Cassiar	19	3	1	0
Dease Lake	19	6	1	0
Granisle	7	3	1	0
Hazelton	109	41	9	5
Houston	60	6	4	0
Kitimat Rural	30	5	0	0
Kitimat Municipal	37	8	1	1
Masset	35	12	1	1
New Aiyansh	24	3	1	1
Prince Rupert Rural	37	12	1	0
Prince Rupert Municipal	91	17	0	0
Queen Charlotte City	37	13	0	0
Smithers	99	30	3	2
Stewart	42	12	2	0
Terrace Rural	134	36	4	0
Terrace Municipal	71	14	0	0
VANCOUVER SUB-DIVISION				
Gibsons	105	45	2	1
Langley City	343	49	3	1
Langley Township	736	90	6	1
Maple Ridge Rural	129	24	6	1
Maple Ridge Municipal	461	80	4	0
Pemberton	66	4	0	0
Sechelt	83	19	3	1
Squamish Rural	125	26	5	1
Squamish Municipal	134	31	1	0
University	115	8	0	0
Vancouver-Bowen Island	13	2	0	0
Whistler	83	13	1	1

(1987)

LOCATION	Total # persons injured	# Injured Alcohol Related	Total # persons killed	# Killed Alcohol Related
White Rock	160	26	0	0
Deas Isle Freeway Patrol (Unit A)	329	35	13	3
Port Mann Freeway Patrol (Unit B)	678	78	12	4
VICTORIA SUB-DIVISION				
Chemainus	94	18	1	0
Colwood	422	83	5	2
Duncan	234	42	3	0
Duncan - North Cowichan	166	40	2	0
Gabriola Island	34	12	0	0
Ganges	49	13	0	0
Ladysmith	123	27	5	2
Lake Cowichan	35	9	0	0
Nanaimo Rural	82	5	5	4
Nanaimo Municipal	743	96	10	6
Pender Island	27	7	0	0
Shawnigan Lake	154	27	1	1
Sidney Rural	11	6	0	0
Sidney Municipal	145	20	1	0
Sooke	123	22	4	2

Types and Locations of Casualty Motor Vehicle Crashes by Police Jurisdiction. British Columbia, 1987.

TYPES AND LOCATIONS OF CASUALTY MOTOR VEHICLE CRASHES IN BRITISH COLUMBIA, 1987.

This report consists of a breakdown of the types and locations of casualty accidents (i.e. a crash where someone was injured or killed.) Each type and location was extracted from the Traffic Accident Report forms (MV 104) which were submitted to the Motor Vehicle Department of the Ministry of Transportation and Highways by the police department/detachment servicing the location of the crash. It should be noted that as these computer-based files are constantly being updated by the Motor Vehicle Department, any figures produced by that department which contradict figures reported herein ought to be considered correct.

In order to interpret the information in this report, two things need to be kept in mind:

1) In most police departments/detachments, the actual number of casualty accidents is very small, so that a difference of one or two accidents can produce a very large percentage figure. Such large percentages based on a small number of accidents should not be taken as indicating any sort of trend or stable condition. They are most probably entirely random variations from police jurisdiction to police jurisdiction.

2) These figures should be considered in light of the provincial figures presented on the first page of the report.

LOCATION	No. of Crashes	TYPES OF CASUALTY MOTOR VEHICLE CRASHES, 1987							LOCATIONS OF CASUALTY MOTOR VEHICLE CRASHES, 1987				
		% Multiple Vehicle	% Motor-cycle	% Pedes-trian	% Bike	% Hit and Run	% Commercial Vehicle	% Out of Province Driver	% At Inter-section	% Between Inter-section	% "T" Junction	% Bridge	% Other
BRITISH COLUMBIA, 1985	25,155	-	-	-	-	4.3	5.1	7.4	45.0	40.6	6.1	2.1	6.1
BRITISH COLUMBIA, 1986	29,138	67.3%	7.1%	7.0%	8.2%	4.9	4.7	9.2	45.9	39.8	6.6	2.2	5.5
BRITISH COLUMBIA, 1987	28,801	55.0	5.4	7.3	7.1	4.5	4.6	8.0	45.7	40.4	6.9	2.0	5.0
INDEPENDENT POLICE FORCES													
Central Saanich	76	41.0	1.3	6.4	11.5	5.1	5.1	5.1	38.2	42.1	7.9	0.0	11.8
Delta Municipal	464	57.3	5.3	6.6	11.0	4.0	3.8	5.9	47.4	30.4	15.7	0.4	6.0
Esquimalt	118	55.7	6.6	13.9	12.3	11.5	3.3	6.6	44.1	39.8	8.5	0.8	6.8
Matsqui	554	64.6	5.1	6.2	5.5	5.3	3.3	5.5	45.8	35.0	13.0	0.9	5.2
Nelson City	37	53.8	5.1	7.7	10.3	2.6	0.0	5.1	54.1	32.4	8.1	0.0	5.4
New Westminster	638	75.8	4.0	7.7	2.9	4.9	7.2	6.3	56.4	33.5	2.8	3.3	3.9
Oak Bay	74	33.3	6.7	13.3	32.0	2.7	0.0	8.0	51.4	33.8	8.1	0.0	6.8
Port Moody	154	67.5	7.1	3.9	8.4	5.8	2.6	4.5	46.1	44.8	7.1	0.6	1.3
Saanich	631	55.0	6.9	7.1	10.7	5.6	3.4	5.8	46.8	37.6	10.3	0.5	4.9
Vancouver City	4,712	66.2	4.4	13.9	10.3	6.3	4.0	8.1	62.8	30.3	3.3	1.9	1.6
Victoria City	886	56.2	10.2	11.4	14.3	6.0	2.5	5.6	60.7	31.6	5.1	0.5	2.1
W. Vancouver	325	59.2	3.6	6.8	8.9	5.0	3.3	5.9	29.5	42.8	4.9	13.2	9.5
FEDERAL AGENCIES													
Military Police	8	12.5	12.5	0.0	25.0	0.0	0.0	12.5	37.5	37.5	25.0	0.0	0.0
National Harbours Board	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ROYAL CANADIAN MOUNTED POLICE													
AUTONOMOUS DETACHMENTS													
Burnaby	1,691	74.9	4.8	7.3	3.8	4.0	3.1	5.5	59.7	29.1	6.9	0.2	4.1
Coquitlam Rural	95	72.4	3.1	4.1	5.1	7.1	4.1	7.1	47.4	36.8	4.2	4.2	7.4
Coquitlam Municipal	546	68.9	4.6	6.6	5.0	6.2	3.4	5.5	57.7	26.6	8.4	0.7	6.6
Port Coquitlam	247	60.3	8.7	5.6	4.8	7.5	3.2	7.1	51.0	30.4	8.1	4.0	6.5
North Vancouver City	362	67.4	4.7	11.2	9.3	8.2	1.1	3.3	56.1	31.2	8.0	0.3	4.4
North Vancouver District	378	66.2	4.9	7.8	7.3	4.4	5.2	6.0	46.8	38.1	6.3	1.1	7.7
Richmond Township	1,167	68.7	4.1	7.2	9.4	4.9	4.7	5.6	49.8	27.2	12.3	2.7	8.0
Surrey	2,252	72.1	4.9	5.1	5.9	7.1	4.8	6.1	55.5	30.0	10.0	0.8	3.7

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CHILLIWACK SUB-DIVISION													
Abbotsford Rural	9	60.0	10.0	10.0	0.0	0.0	0.0	0.0	44.4	22.2	22.2	0.0	11.1
Abbotsford Municipal	164	56.6	6.0	4.8	4.2	3.6	3.0	6.0	47.6	32.9	12.2	0.6	6.7
Agassiz	62	29.3	4.0	2.7	6.7	2.7	10.7	4.0	19.4	62.5	5.6	9.7	2.8
Boston Bar	27	44.8	0.0	10.3	0.0	0.0	41.4	20.7	7.4	70.4	0.0	3.7	18.5
Chilliwack Rural	41	32.0	14.0	2.0	0.0	4.0	2.0	12.0	19.5	53.7	12.2	2.4	12.2
Chilliwack Municipal	358	55.1	7.3	7.5	9.4	5.4	1.9	5.9	41.3	38.5	12.0	0.8	7.3
Hope	148	27.3	1.3	2.0	0.0	0.7	12.0	8.8	8.1	80.4	0.7	6.8	4.1
Mission Rural	38	29.3	7.3	9.8	7.3	9.8	2.4	4.9	31.6	57.9	2.6	5.3	2.6
Mission Municipal	133	50.4	2.9	6.5	6.5	5.8	5.8	5.8	40.6	48.1	7.5	0.8	3.0
Sumas Freeway Patrol (Unit C)	112	26.3	2.6	2.6	0.0	0.0	10.5	13.2	7.1	70.5	0.9	2.7	18.8
COURTENAY SUB-DIVISION													
Alert Bay	4	0.0	25.0	25.0	0.0	0.0	25.0	25.0	25.0	50.0	0.0	0.0	25.0
Campbell River Rural	86	34.0	5.2	5.2	1.0	3.1	5.2	6.2	15.1	69.8	9.3	1.2	4.7
Campbell River Municipal	177	58.7	9.5	7.3	11.7	2.2	3.4	2.8	52.0	31.6	10.2	0.0	6.2
Comox Municipal	25	51.9	7.4	3.7	11.1	7.4	3.7	3.7	48.0	32.0	16.0	0.0	4.0
Courtenay Rural	169	26.4	5.5	2.7	4.4	1.6	4.9	6.0	20.1	59.2	14.2	0.6	5.9
Courtenay Municipal	117	55.7	9.0	9.0	9.9	4.9	3.3	5.7	54.7	29.9	8.5	1.7	5.1
Gold River	18	12.5	0.0	0.0	8.3	0.0	4.2	0.0	11.1	88.9	0.0	0.0	0.0
Parksville	160	42.7	7.3	1.2	7.9	1.2	3.7	7.9	28.8	54.4	9.4	1.9	5.6
Port Alberni Rural	60	21.1	2.8	2.8	1.4	0.0	2.8	5.6	13.3	73.3	3.3	1.7	8.3
Port Alberni Municipal	123	49.2	7.0	9.4	10.2	2.3	3.1	2.3	64.2	26.8	4.9	0.8	3.3
Port Alice	14	26.7	6.7	0.0	6.7	6.7	0.0	0.0	7.1	85.7	0.0	0.0	7.1
Port Hardy	66	21.1	0.0	5.6	4.2	1.4	1.4	5.6	12.1	68.2	7.6	3.0	9.1
Port McNeill	45	23.1	0.0	3.8	0.0	0.0	11.5	0.0	24.4	71.1	0.0	2.2	2.2
Powell River Rural	30	20.0	5.7	0.0	0.0	0.0	0.0	2.9	26.7	60.0	10.0	3.3	0.0
Powell River Municipal	57	44.8	3.4	10.3	10.3	6.9	5.2	3.4	47.4	38.6	7.0	0.0	7.0
Quadra Island	15	20.0	6.7	0.0	0.0	0.0	0.0	20.0	26.7	66.7	6.7	0.0	0.0
Sayward	25	18.5	0.0	0.0	0.0	0.0	3.7	0.0	8.0	92.0	0.0	0.0	0.0

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COURTENAY SUB-DIVISION cont'													
Tahsis	12	16.7	8.3	25.0	8.3	0.0	0.0	8.3	25.0	25.0	25.0	16.7	8.3
Tofino	16	11.8	11.8	5.9	0.0	0.0	5.9	5.9	12.5	87.5	0.0	0.0	0.0
Ucluelet	38	27.9	14.0	0.0	0.0	0.0	0.0	14.0	13.2	73.7	5.3	2.6	5.3
Texada Island	3	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	66.7
KAMLOOPS SUB-DIVISION													
Alexis Creek	21	23.1	0.0	3.8	11.5	0.0	0.0	7.7	14.3	76.2	4.8	0.0	4.8
Anahim Lake	13	15.4	0.0	15.4	0.0	0.0	0.0	7.7	7.7	84.6	7.7	0.0	0.0
Ashcroft	36	22.2	2.8	0.0	2.8	0.0	8.3	16.7	5.6	83.3	5.6	0.0	5.6
Barriere	39	14.0	0.0	4.7	0.0	2.3	9.3	11.6	15.4	74.4	7.7	2.6	0.0
Chase	59	23.3	3.3	1.7	1.7	6.7	16.7	13.3	16.9	64.4	5.1	6.8	6.8
Clearwater	87	21.7	3.3	2.2	1.1	0.0	15.2	27.2	17.2	79.3	1.1	1.1	1.1
Clinton	54	18.2	1.8	0.0	1.8	0.0	18.2	20.0	5.6	88.9	1.9	0.0	3.7
100 Mile House	105	24.6	1.8	2.6	4.4	0.9	7.0	4.4	12.4	67.6	11.4	1.0	7.6
Kamloops Rural	79	22.9	3.6	1.2	0.0	0.0	9.6	20.5	10.1	82.3	1.3	0.0	6.3
Kamloops Municipal	604	56.7	9.0	5.1	8.2	3.6	4.9	7.4	49.7	31.0	8.1	3.3	7.9
Lillooet	51	18.6	1.7	3.4	1.7	3.4	6.8	1.7	11.8	76.5	2.0	2.0	7.8
Logan Lake	17	11.8	5.9	0.0	0.0	0.0	11.8	5.9	11.8	76.5	5.9	0.0	5.9
Lytton	32	18.2	6.1	0.0	0.0	0.0	21.2	21.2	3.1	87.5	3.1	3.1	3.1
Merritt Rural	116	10.0	4.2	1.7	0.0	0.8	5.8	13.3	3.4	83.6	6.0	0.9	6.0
Merritt Municipal	46	43.5	2.2	8.7	13.0	0.0	4.3	6.5	34.8	43.5	8.7	0.0	13.0
Spences Bridge	11	16.7	0.0	0.0	0.0	0.0	25.0	33.3	0.0	72.7	0.0	9.1	18.2
Valemount	56	10.2	0.0	0.0	1.7	0.0	10.2	47.5	7.1	82.1	1.8	1.8	7.1
Williams Lake Rural	127	18.8	3.8	2.3	0.8	0.8	6.0	8.3	11.8	78.0	6.3	0.8	3.1
Williams Lake Municipal	85	55.6	2.2	8.9	5.6	8.9	5.6	4.4	52.8	28.2	12.9	0.0	5.9
KELOWNA SUB-DIVISION													
Armstrong	69	28.2	9.9	2.8	5.6	0.0	2.8	4.2	21.7	73.9	2.9	0.0	1.4
Enderby	54	30.5	3.4	5.1	3.4	1.7	3.4	22.0	29.6	59.3	7.4	0.0	3.7
Falkland	20	27.3	0.0	0.0	0.0	0.0	4.5	22.7	10.0	75.0	10.0	0.0	5.0
Kelowna Rural	233	34.1	7.5	3.2	4.8	1.6	4.8	9.5	29.6	54.1	4.3	3.9	8.2
Kelowna Municipal	620	54.9	8.6	6.0	11.1	3.9	2.7	8.0	53.9	32.1	7.1	1.6	5.3

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KELOWNA SUB-DIVISION cont'													
Keremeos	35	8.6	5.7	8.6	0.0	0.0	17.1	11.4	11.4	71.4	5.7	0.0	11.4
Lumby	43	20.0	6.7	0.0	0.0	0.0	2.2	4.4	14.0	86.0	0.0	0.0	0.0
Oliver	28	41.2	14.7	0.0	5.9	0.0	0.0	8.8	35.7	57.1	3.6	3.6	0.0
Osoyoos	43	23.4	8.5	4.3	2.1	4.3	4.3	17.0	18.6	53.5	11.6	0.0	16.3
Penticton Rural	82	32.1	4.8	2.4	3.6	6.0	4.8	9.5	17.1	74.4	4.9	1.2	2.4
Penticton Municipal	211	45.8	11.7	10.7	15.9	5.6	1.9	9.8	50.0	35.1	9.0	0.5	5.2
Princeton	95	24.1	7.4	4.6	2.8	0.9	11.1	13.0	10.5	80.0	2.1	4.2	3.2
Revelstoke	109	31.9	3.4	3.4	2.6	4.3	15.5	33.6	19.3	66.1	2.8	7.3	4.6
Salmon Arm Rural	46	19.1	2.1	0.0	2.1	0.0	14.9	10.6	21.7	69.6	4.3	0.0	4.3
Salmon Arm Municipal	82	47.7	7.0	4.7	4.7	4.7	3.5	20.9	50.0	34.1	9.8	0.0	6.1
Sicamous	48	30.8	7.7	0.0	1.9	0.0	17.3	40.4	18.8	66.7	2.1	6.3	6.3
Summerland Municipal	35	36.8	10.8	5.3	7.9	5.3	5.3	13.2	37.1	48.6	8.6	0.0	5.7
Vernon Rural	143	24.0	9.6	4.1	2.7	2.1	1.4	8.2	20.3	62.9	11.2	0.0	5.6
Vernon Municipal	218	54.5	6.8	10.5	15.0	5.5	1.8	10.9	58.7	26.1	7.3	0.5	7.3
NELSON SUB-DIVISION													
Castlegar Rural	58	23.7	8.5	1.7	1.7	0.0	3.4	11.9	17.2	67.2	5.2	6.9	3.4
Castlegar Municipal	45	54.3	13.0	2.2	10.9	2.2	4.3	8.7	33.3	35.6	13.3	0.0	17.8
Cranbrook Rural	60	16.9	3.1	0.0	1.5	0.0	4.6	16.9	16.7	70.0	3.3	5.0	5.0
Cranbrook Municipal	66	65.7	4.5	7.5	10.4	4.5	1.5	9.0	60.6	31.8	6.1	0.0	1.5
Crescent Valley	3	33.3	0.0	0.0	0.0	0.0	0.0	0.0	66.7	33.3	0.0	0.0	0.0
Creston	99	22.5	9.8	5.9	2.0	1.0	1.0	23.5	19.2	68.7	7.1	2.0	3.0
Elkford	14	28.6	7.1	0.0	0.0	0.0	14.3	14.3	7.1	85.8	0.0	0.0	7.1
Fernie	50	41.8	1.8	7.3	9.1	0.0	7.3	30.9	40.0	48.0	2.0	6.0	4.0
Field	12	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	91.7	0.0	0.0	8.3
Fruitvale	16	29.4	17.6	0.0	5.9	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0
Golden	115	22.3	3.3	5.0	5.0	2.5	11.6	36.4	18.3	73.0	1.7	4.3	2.6
Grand Forks	68	27.5	14.5	2.9	2.9	0.0	7.2	10.1	20.6	70.6	1.5	0.0	7.4
Invermere	42	22.7	6.8	0.0	2.3	0.0	2.3	25.0	23.8	59.5	7.1	2.4	7.1
Kaslo	13	7.1	7.1	0.0	0.0	0.0	7.1	14.3	7.7	84.6	0.0	7.7	0.0
Kimberley Rural	22	20.0	0.0	4.0	0.0	0.0	8.0	32.0	9.1	77.3	4.5	0.0	9.1
Kimberley Municipal	17	17.6	5.9	0.0	11.8	0.0	0.0	5.9	23.5	64.7	11.8	0.0	0.0

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NELSON SUB-DIVISION cont'													
Midway	39	10.0	0.0	2.5	2.5	0.0	2.5	10.0	10.3	87.2	2.6	0.0	0.0
Nakusp	37	15.9	6.8	4.5	6.8	0.0	9.1	6.8	10.8	78.4	8.1	0.0	2.7
Nelson	57	18.6	3.4	1.7	0.0	0.0	6.8	6.8	12.3	75.4	3.5	5.3	3.5
New Denver	14	7.1	21.4	7.1	0.0	0.0	7.1	7.1	14.3	85.7	0.0	0.0	0.0
Radium	32	15.2	0.0	3.0	0.0	0.0	21.2	45.5	12.5	71.9	6.3	3.1	6.3
Rossland	17	33.3	9.5	9.5	4.8	0.0	0.0	9.5	47.1	52.9	0.0	0.0	0.0
Salmo	27	11.1	0.0	0.0	0.0	0.0	11.1	11.1	7.4	81.5	7.4	0.0	3.7
Sparwood	41	22.7	2.3	0.0	4.5	2.3	13.6	45.5	22.0	75.6	0.0	2.4	0.0
Trail Rural	22	43.5	8.7	0.0	4.3	0.0	8.7	0.0	40.9	50.0	4.5	4.5	0.0
Trail Municipal	40	52.5	0.0	7.5	17.5	5.0	5.0	0.0	52.5	32.5	5.0	0.0	10.0
PRINCE GEORGE SUB-DIVISION													
Burns Lake	41	23.8	2.4	7.1	7.1	4.8	9.5	4.8	22.0	61.0	12.2	2.4	2.4
Chetwynd	53	8.6	5.2	1.7	0.0	0.0	5.2	6.9	15.1	69.8	0.0	5.7	9.4
Dawson Creek Rural	68	29.4	1.5	0.0	1.5	2.9	10.3	33.8	17.6	67.6	5.9	2.9	5.9
Dawson Creek Municipal	60	60.7	1.6	6.6	13.1	3.3	6.6	27.9	51.7	35.0	10.0	0.0	3.3
Fort Nelson	41	23.5	3.9	3.9	0.0	2.0	13.7	27.5	14.6	75.6	9.8	0.0	0.0
Fort St. James	31	25.7	0.0	8.6	0.0	0.0	5.7	5.7	16.1	77.4	6.5	0.0	0.0
Fort St. John Rural	192	23.8	2.9	1.9	1.0	2.9	10.5	24.8	15.2	77.2	1.1	1.1	5.4
Fort St. John Municipal	65	58.2	9.0	6.0	13.4	4.5	3.0	6.0	72.3	20.0	4.6	0.0	3.1
Fraser Lake	22	4.3	0.0	4.3	0.0	4.3	4.3	4.3	0.0	81.8	4.5	13.6	0.0
Hudson Hope	8	0.0	0.0	0.0	0.0	0.0	11.1	22.2	37.5	25.0	12.5	0.0	25.0
Mackenzie Rural	31	18.8	0.0	3.1	0.0	0.0	12.5	9.4	6.5	74.2	3.2	6.5	9.7
Mackenzie Municipal	16	29.4	11.8	11.8	5.9	5.9	0.0	11.8	25.0	50.0	6.3	6.3	12.5
McBride	30	9.7	0.0	3.2	0.0	0.0	9.7	35.5	6.7	83.3	3.3	3.3	3.3
Prince George Rural	152	23.6	4.2	3.0	1.2	0.0	8.5	12.1	11.2	77.0	2.0	2.6	7.2
Prince George City	485	58.0	6.5	6.7	7.7	5.5	3.2	5.7	51.1	34.4	7.2	1.9	5.4
Quesnel Rural	136	27.5	4.2	2.1	1.4	0.7	6.3	9.2	18.4	69.9	5.1	0.0	6.6
Quesnel Municipal	104	56.5	4.6	11.1	7.4	3.7	8.3	10.2	51.0	27.9	10.6	4.8	5.8
Tumbler Ridge	13	19.0	0.0	4.8	9.5	4.8	9.5	4.8	15.4	69.1	0.0	7.7	7.7
Vanderhoof	51	34.0	1.9	9.4	0.0	1.9	9.4	7.5	35.3	56.9	5.9	2.0	0.0
Watson Lake, Teslin	13	35.3	0.0	0.0	0.0	0.0	35.3	88.2	0.0	84.6	0.0	7.7	7.7
Wells	6	28.6	0.0	0.0	0.0	0.0	0.0	14.3	0.0	83.3	0.0	0.0	16.7

LOCATION	No. of Crashes	TYPES OF CASUALTY MOTOR VEHICLE CRASHES, 1987							LOCATIONS OF CASUALTY MOTOR VEHICLE CRASHES, 1987				
		% Multiple Vehicle	% Motor-cycle	% Pedes-trian	% Bike	% Hit and Run	% Commercial Vehicle	% Out of Province Driver	% At inter-section	% Between inter-section	% "T" Junction	% Bridge	% Other
PRINCE RUPERT SUB-DIVISION													
Atlin	6	0.0	0.0	0.0	0.0	0.0	14.3	71.4	16.7	50.0	0.0	16.7	16.7
Bella Coola	15	11.1	0.0	22.2	0.0	5.6	0.0	0.0	13.3	46.7	20.0	6.7	13.3
Cassiar	15	25.0	6.3	0.0	0.0	0.0	25.0	37.5	6.7	80.0	6.7	6.7	0.0
Dease Lake	10	25.0	0.0	6.3	0.0	0.0	6.3	31.3	10.0	80.0	10.0	0.0	0.0
Granisle	6	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	83.3	0.0	0.0	16.7
Hazelton	71	9.0	1.3	10.3	1.3	0.0	5.1	3.8	11.3	73.2	2.8	4.2	8.5
Houston	31	16.1	3.2	0.0	3.2	0.0	12.9	6.5	9.7	87.1	0.0	0.0	3.2
Kitimat Rural	13	23.5	0.0	0.0	0.0	0.0	5.9	5.9	7.7	69.2	7.7	15.4	0.0
Kitimat Municipal	28	22.6	0.0	12.9	12.9	3.2	3.2	0.0	25.0	53.6	7.1	3.6	10.7
Masset	24	20.8	0.0	4.2	0.0	0.0	4.2	0.0	20.8	58.3	4.2	0.0	16.7
New Aiyansh	11	14.3	0.0	7.1	0.0	0.0	14.3	0.0	36.4	45.5	0.0	9.1	9.1
Prince Rupert Rural	14	15.8	0.0	0.0	0.0	10.5	10.5	10.5	7.1	85.7	0.0	0.0	7.1
Prince Rupert City	75	48.1	6.5	23.4	2.6	1.3	0.0	6.5	50.7	38.7	6.7	1.3	2.7
Queen Charlotte	24	12.0	0.0	0.0	0.0	0.0	8.0	0.0	20.8	54.2	8.3	0.0	16.7
Smithers	64	32.3	4.6	4.6	3.1	0.0	1.5	4.6	40.6	45.3	4.7	1.6	7.8
Stewart	32	29.4	0.0	0.0	0.0	0.0	8.9	14.7	9.4	71.8	0.0	12.5	6.3
Terrace Rural	89	15.6	6.3	3.1	2.1	2.1	7.3	9.4	12.4	73.0	1.1	4.5	9.0
Terrace Municipal	61	33.3	4.8	14.3	15.9	4.8	9.5	7.9	44.3	47.5	1.6	0.0	6.6
VANCOUVER SUB-DIVISION													
Gibsons	68	36.8	14.7	2.9	1.5	5.9	4.4	8.8	32.4	64.7	1.5	0.0	1.5
Langley City	245	65.7	4.0	8.9	6.9	5.6	4.0	5.6	52.2	30.6	11.8	0.0	5.3
Langley Township	494	59.0	4.0	8.9	6.9	4.4	5.6	6.0	44.3	38.9	11.3	1.0	4.5
Maple Ridge Rural	78	52.6	9.0	3.8	5.1	6.4	2.6	2.6	38.5	44.9	7.7	3.8	5.1
Maple Ridge Municipal	324	55.1	6.3	9.3	9.0	5.1	3.0	3.6	46.9	40.7	9.6	0.0	2.8
Pemberton	35	20.5	7.7	5.1	5.1	0.0	5.1	10.3	2.9	85.7	5.7	2.9	2.9
Sechelt	63	28.8	4.5	9.1	1.5	0.0	6.1	3.0	22.2	71.4	6.3	0.0	0.0
Squamish Rural	69	39.7	7.7	0.0	1.3	0.0	3.8	10.3	5.8.2	87.0	4.3	1.4	1.4
Squamish Municipal	91	36.2	9.6	4.3	2.1	1.1	5.3	3.2	38.5	53.8	3.3	1.1	3.3
University	84	38.8	5.9	8.2	20.0	1.2	0.0	3.5	45.2	42.9	4.8	0.0	7.1
Vancouver-Bowen Island	10	27.3	9.1	0.0	0.0	0.0	9.1	0.0	0.0	80.0	0.0	0.0	20.0
Whistler	59	36.1	6.6	3.3	1.6	1.6	4.9	8.2	25.4	62.7	1.7	3.4	6.8

LOCATION	No. of Crashes	TYPES OF CASUALTY MOTOR VEHICLE CRASHES, 1987							LOCATIONS OF CASUALTY MOTOR VEHICLE CRASHES, 1987				
		% Multiple Vehicle	% Motor-cycle	% Pedes-trian	% Bike	% Hit and Run	% Commercial Vehicle	% Out of Province Driver	% At Inter-section	% Between Inter-section	% "T" Junction	% Bridge	% Other
VANCOUVER SUB-DIVISION cont'													
White Rock	114	67.5	7.7	8.5	6.8	5.1	1.7	6.8	69.3	25.4	2.6	0.0	2.6
Deas Isle Freeway Patrol (Unit A)	202	72.2	2.9	1.0	0.5	3.9	6.8	10.7	27.2	39.1	1.0	10.9	21.8
Port Mann Freeway Patrol (Unit B)	453	69.4	2.8	0.2	0.7	4.4	6.8	10.7	8.8	52.5	1.1	22.5	15.0
VICTORIA SUB-DIVISION													
Chemainus	58	35.5	1.6	4.8	4.8	0.0	3.2	8.1	34.5	39.7	6.9	8.6	10.3
Colwood	295	48.7	7.4	6.8	8.7	4.2	2.9	6.1	39.3	40.7	11.5	1.0	7.5
Duncan	153	50.9	3.1	6.8	8.1	2.5	6.2	4.3	45.8	37.3	12.4	0.7	3.9
Duncan - North Cowichan	98	42.6	4.0	2.0	8.9	1.0	1.0	4.0	46.9	42.9	4.1	0.0	6.1
Gabriola Island	26	26.9	3.8	3.8	3.8	0.0	0.0	11.5	23.1	57.7	11.5	0.0	7.7
Ganges	34	22.2	5.6	5.6	8.3	5.6	0.0	5.6	14.7	73.5	5.9	0.0	5.9
Ladysmith	70	39.5	9.2	5.3	1.3	7.9	3.9	2.6	38.6	47.1	11.4	1.4	1.4
Lake Cowichan	24	26.9	11.5	0.0	3.8	3.8	3.8	7.7	33.3	62.5	4.2	0.0	0.0
Nanaimo Rural	60	42.6	6.6	3.3	3.3	0.0	11.5	3.3	36.7	51.7	5.0	0.0	6.7
Nanaimo Municipal	514	58.9	6.0	8.3	8.9	4.4	2.9	6.0	57.8	31.1	6.4	0.0	4.7
Pender Island	16	18.8	12.5	0.0	0.0	0.0	6.3	6.3	25.0	50.0	25.0	0.0	0.0
Shawnigan Lake	100	37.6	4.0	2.0	2.0	1.0	5.0	4.0	22.0	69.0	5.0	0.0	4.0
Sidney Rural	8	25.0	0.0	12.5	0.0	0.0	0.0	25.0	25.0	50.0	0.0	0.0	25.0
Sidney Municipal	108	59.5	4.5	3.6	9.0	3.6	2.7	7.2	53.7	28.7	11.1	0.0	6.5
Sooke	85	24.0	10.4	7.3	3.1	1.0	3.1	7.3	20.0	58.8	4.7	1.2	15.3

Canadian Criminal Code Traffic Charges by Police Jurisdiction.
British Columbia, 1987.

CANADIAN CRIMINAL CODE CHARGES IN BRITISH COLUMBIA, 1987.
PERSONS CHARGED BY POLICE JURISDICTION.

This report deals with the number of persons charged under the Canadian Criminal Code in British Columbia in 1986 by police reporting jurisdiction. It includes the following:

- Total Persons Charged under the Canadian Criminal Code including Criminal Code Traffic Violations.
- Total Persons Charged under the Canadian Criminal Code Traffic Violations.
- Persons Charged under the Canadian Criminal Code for Traffic Violations Involving Drinking-Driving Offences.
- Persons charged with Canadian Criminal Code drinking-driving offences as a percentage of the total number of persons charged under the Canadian Criminal Code.

These data were supplied from the Statistics Canada Uniform Crime Report by the Policy Division of the Police Services Branch, Ministry of Attorney General. As these computer-based files are constantly being updated, any figures produced by that Division that contradict figures reported herein ought to be considered correct.

BRITISH COLUMBIA: NUMBER OF PERSONS CHARGED WITH CRIMINAL CODE AND CRIMINAL CODE TRAFFIC OFFENCES; AND DRINKING DRIVING AS A % OF TOTAL CRIMINAL CODE OFFENCES (INCLUDING CC-TRAFFIC); FOR 1987.

POLICE JURISDICTION	TOTAL CRIMINAL CODE Including TRAFFIC	CRIMINAL CODE TRAFFIC				
		TOTAL CRIMINAL TRAFFIC	DRINKING DRIVING			
			IMPAIRED OPERATION MOTOR VEH. CAUSING BODILY HARM	IMPAIRED OPERATION MOTOR VEH. CAUSING DEATH	IMPAIRED OPERATION OF MOTOR VEH. OR OVER .08/FAILURE OR REFUSE TO PROVIDE BLOOD OR BREATH SAMPLE	DRINKING DRIVING AS A PERCENT OF TOTAL CRIMINAL CODE INCLUDING TRAFFIC
British Columbia - 1986	73,118	15,807	151	24	14,372	20%
British Columbia - 1987	72,107	15,935	127	18	14,121	20%
MUNICIPAL FORCES						
Vancouver	14,014	2,455	9	2	1,884	14%
Victoria	2,194	185	30	0	126	7%
Saanich	1,052	168	0	0	147	14%
Central Saanich	90	27	0	0	23	26%
Esquimalt	353	81	0	0	73	21%
Oak Bay	120	14	0	0	12	10%
Delta	1,448	342	5	0	299	21%
Matsqui	1,050	207	0	0	171	16%
New Westminster	1,176	219	0	0	160	14%
West Vancouver	771	310	1	0	297	39%
Nelson	215	34	0	0	34	16%
Port Moody	359	133	4	0	109	31%
KELOWNA S/D						
Armstrong Prov	102	13	0	0	12	12%
Enderby Prov	120	30	0	0	29	24%
Falkland Prov	49	13	0	0	13	27%
Kelowna Prov	387	96	5	0	86	24%
Kelowna Mun	1,512	297	12	0	270	19%
Keremeos Prov	64	30	0	0	30	47%
Lumby Prov	66	23	0	0	21	32%
Oliver Prov	182	48	0	0	46	25%
Osoyoos Prov	116	21	0	0	19	16%
Penticton Prov	127	63	1	0	51	41%
Penticton Mun	806	116	0	0	104	13%
Princeton Prov	157	41	0	0	40	25%
Revelstoke Prov	34	19	0	0	19	56%
Salmon Arm Prov	64	35	1	0	32	52%
Salmon Arm Mun	383	90	1	1	82	22%
Sicamous Prov	69	16	0	0	14	20%
Vernon Prov	131	60	0	2	57	45%
Vernon Mun	988	245	0	0	239	24%
Summerland Mun	60	22	0	0	18	30%
Revelstoke Extended	263	64	0	0	57	22%
Coldstream Extended	42	13	0	0	12	29%
KAMLOOPS S/D						
Alexis Creek Prov	164	58	0	0	43	26%
Anahim Lake Prov	16	2	0	0	2	13%
Ashcroft Prov	182	44	0	0	38	21%
Barriere Prov	52	21	0	1	20	40%
Chase Prov	179	63	0	0	57	32%
Clearwater Prov	104	19	0	0	17	16%
Clinton Prov	80	15	0	0	14	18%
Kamloops Prov	31	11	0	0	9	29%
Kamloops Mun	1,967	374	20	1	338	18%
Lillooet Prov	188	72	0	0	65	35%
Logan Lake Prov	53	3	0	0	3	6%
Lytton Prov	102	44	0	1	42	42%
Merritt Prov	115	51	0	0	50	43%
Merritt Mun	238	50	0	0	49	21%
100 Mile House Prov	227	66	0	0	62	27%
Spences Bridge Prov	11	5	0	0	3	27%
Valemount Prov	62	13	1	0	12	21%
Williams Lake Prov	156	34	0	0	30	19%
Williams Lake Mun	606	137	0	0	131	22%

POLICE JURISDICTION	TOTAL CRIMINAL CODE Including TRAFFIC	CRIMINAL CODE TRAFFIC				
		TOTAL CRIMINAL TRAFFIC	DRINKING DRIVING			
			IMPAIRED OPERATION MOTOR VEH. CAUSING BODILY HARM	IMPAIRED OPERATION MOTOR VEH. CAUSING DEATH	IMPAIRED OPERATION OF MOTOR VEH. OR OVER .08/FAILURE OR REFUSE TO PROVIDE BLOOD OR BREATH SAMPLE	DRINKING DRIVING AS A PERCENT OF TOTAL CRIMINAL CODE INCLUDING TRAFFIC
NELSON S/D						
Castlegar Prov	25	7	0	0	5	20%
Cranbrook Prov	66	25	0	0	24	36%
Cranbrook Mun	603	125	0	0	120	20%
Crescent Valley Prov	11	1	0	0	1	9%
Creston Prov	301	96	2	0	89	30%
Fernie Prov	47	17	0	0	16	34%
Field Prov	2	0	0	0	0	0%
Fruitvale Prov	60	12	0	0	11	18%
Golden Prov	170	77	0	0	67	39%
Grand Forks Prov	106	45	0	0	42	40%
Invermere Prov	145	37	0	0	35	24%
Kaslo Prov	22	2	0	0	2	9%
Kimberley Prov	31	9	0	0	6	19%
Kimberley Mun	131	38	0	0	35	27%
Midway Prov	34	9	0	0	9	26%
Nakusp Prov	50	7	0	0	6	12%
Nelson Prov	50	16	0	0	15	30%
New Denver Prov	23	1	0	0	1	4%
Radium Prov	27	12	0	0	10	37%
Rossland Prov	31	5	0	0	5	16%
Salmo Prov	93	40	0	0	38	41%
Sparwood Prov	95	19	0	0	16	17%
Trail Prov	19	4	0	0	4	21%
Trail Mun	206	47	0	0	43	21%
Castlegar Mun	157	23	0	0	21	13%
Elkford Prov	15	7	0	0	7	47%
Fernie Extended	63	22	0	0	21	33%
PRINCE GEORGE S/D						
Burns Lake Prov	268	84	1	0	75	28%
Chetwynd Prov	155	49	0	0	48	31%
Dawson Creek Prov	80	30	0	0	28	35%
Dawson Creek Mun	567	130	0	0	125	22%
Fort Nelson Prov	194	38	0	0	35	18%
Fort St. James Prov	254	41	1	0	37	15%
Fort St. John Prov	121	36	0	0	33	27%
Fort St. John Mun	533	101	0	0	69	13%
Fraser Lake Prov	83	18	0	1	14	18%
Hudson Hope Prov	22	1	0	0	1	5%
Mackenzie Prov	52	6	0	0	6	12%
McBride Prov	38	8	0	0	8	21%
Prince George Prov	113	33	0	0	31	27%
Quesnel Prov	134	40	0	0	38	28%
Quesnel Mun	320	107	0	0	103	32%
Vanderhoof Prov	458	126	1	0	120	26%
Wells Prov	20	4	0	0	4	20%
Prince George Mun	2,777	646	2	0	593	21%
Mackenzie Mun	121	18	0	0	18	15%
Tumbler Ridge Prov	79	11	1	0	10	14%
PRINCE RUPERT S/D						
Atlin Prov	12	2	0	0	2	17%
Bella Coola Prov	43	11	0	0	11	26%
Cassiar Prov	84	20	0	0	19	23%
New Hazelton Prov	220	93	2	1	87	41%
Houston Prov	113	22	0	0	19	17%
Kitimat Prov	20	4	0	0	4	20%
Kitimat Mun	219	49	0	1	48	22%
Masset Prov	100	23	0	0	21	21%
Prince Rupert Prov	60	7	0	0	4	7%

POLICE JURISDICTION	TOTAL CRIMINAL CODE Including TRAFFIC	CRIMINAL CODE TRAFFIC				
		TOTAL CRIMINAL TRAFFIC	DRINKING DRIVING			
			IMPAIRED OPERATION MOTOR VEH. CAUSING BODILY HARM	IMPAIRED OPERATION MOTOR VEH. CAUSING DEATH	IMPAIRED OPERATION OF MOTOR VEH. OR OVER .08/FAILURE OR REFUSE TO PROVIDE BLOOD OR BREATH SAMPLE	DRINKING DRIVING AS A PERCENT OF TOTAL CRIMINAL CODE INCLUDING TRAFFIC
PRINCE RUPERT S/D Cont'd						
Prince Rupert Mun	788	160	0	0	157	20%
Queen Charlotte City Prov	52	8	0	0	7	13%
Smithers Prov	463	172	0	1	146	32%
Stewart Prov	34	13	0	0	11	32%
Dease Lake Prov	26	3	0	0	3	12%
Terrace Prov	167	76	0	0	72	43%
Terrace Mun	598	129	0	0	127	21%
Granisle Prov	10	1	0	0	1	10%
Bella Bella Prov	55	7	0	0	7	13%
New Aiyansh Prov	64	6	0	1	3	6%
VANCOUVER/ CHILLIWACK S/D						
Abbotsford Prov	20	9	0	0	8	40%
Abbotsford Mun	404	162	0	1	146	36%
Agassiz Prov	255	75	0	0	69	27%
Burnaby Mun	2,863	507	0	1	457	16%
Boston Bar Prov	89	35	0	0	30	34%
Chilliwack Prov	137	15	0	0	13	9%
Chilliwack Mun	1,288	210	1	0	190	15%
Coquitlam Prov	54	28	0	0	24	44%
Coquitlam Mun	1,475	244	5	0	211	15%
Port Coquitlam Mun	538	125	1	0	109	20%
Maple Ridge Prov	17	1	0	0	1	6%
Maple Ridge Mun	867	211	1	0	201	23%
Hope Prov	312	102	2	0	89	29%
Gibsons Prov	244	67	2	0	62	26%
Langley City Mun	533	98	0	0	91	17%
Langley Twsp Mun	702	182	2	0	161	23%
Mission Prov	37	13	0	0	9	24%
Mission Mun	586	125	1	0	121	21%
N. Vancouver City Mun	651	165	1	0	146	23%
N. Vancouver Dist Mun	755	152	0	0	140	19%
Richmond Mun	1,466	374	1	1	351	24%
Sechelt Prov	228	55	1	0	49	22%
Squamish Prov	49	26	1	1	20	45%
Squamish Mun	344	83	0	0	76	22%
Surrey Mun	4,436	927	2	0	863	19%
University Prov	89	31	0	0	30	34%
White Rock Mun	303	99	1	0	93	31%
Pemberton Prov	47	17	0	0	15	32%
Whistler Prov	119	49	0	0	48	40%
Surrey Prov	28	24	1	0	21	79%
Pitt Meadows Extended	92	40	0	0	36	39%
Bowen Island Prov	3	1	0	0	1	33%
VICTORIA S/D						
North Cowichan Mun (1)	212	77	0	0	74	35%
Colwood Prov	468	169	1	0	158	34%
Duncan Prov	367	121	0	0	118	32%
Gabriola Island Prov	22	7	0	0	6	27%
Ganges Prov	74	24	0	0	23	31%
Ladysmith Prov	177	44	0	1	39	23%
Lake Cowichan Prov	117	37	0	0	36	31%
Nanaimo Prov	109	32	0	0	27	25%
Nanaimo Mun	1,744	376	0	0	357	20%
Pender Island Prov	24	4	0	0	3	13%
Shawnigan Lake Prov	74	25	0	0	24	32%
Sidney Prov	10	1	0	0	1	10%
Sidney Mun	194	28	0	0	25	13%

POLICE JURISDICTION	TOTAL CRIMINAL CODE Including TRAFFIC	CRIMINAL CODE TRAFFIC				
		TOTAL CRIMINAL TRAFFIC	DRINKING DRIVING			
			IMPAIRED OPERATION MOTOR VEH. CAUSING BODILY HARM	IMPAIRED OPERATION MOTOR VEH. CAUSING DEATH	IMPAIRED OPERATION OF MOTOR VEH. OR OVER .08/FAILURE OR REFUSE TO PROVIDE BLOOD OR BREATH SAMPLE	DRINKING DRIVING AS A PERCENT OF TOTAL CRIMINAL CODE INCLUDING TRAFFIC
VICTORIA S/D Cont'd						
Sooke Prov	163	17	0	0	16	10%
North Saanich Extended	56	15	0	0	14	25%
COURTENAY S/D						
Alert Bay Prov	35	2	0	0	2	6%
Campbell River Prov	212	50	0	0	36	17%
Campbell River Mun	657	138	0	0	124	19%
Comox Mun	79	18	0	0	16	20%
Courtenay Prov	235	91	0	0	88	37%
Courtenay Mun	405	140	0	0	128	32%
Gold River Prov	28	11	0	0	11	39%
Parksville Prov	261	95	0	0	90	34%
Port Alberni Prov	103	30	1	0	28	28%
Port Alberni Mun	842	195	2	0	178	21%
Port Alice Prov	31	4	0	0	3	10%
Port Hardy Prov	50	19	0	0	17	34%
Port McNeill Prov	79	12	0	0	12	15%
Powell River Prov	78	28	0	0	24	31%
Powell River Mun	350	82	0	0	72	21%
Quadra Island Prov	32	11	0	0	8	25%
Sayward Prov	11	4	0	0	4	36%
Tahsis Prov	26	5	0	0	5	19%
Tofino Prov	83	11	0	0	11	13%
Ucluelet Prov	94	17	0	0	16	17%
Parksville Extended	145	32	0	0	30	21%
Port Hardy Extended	141	41	0	0	38	27%
Texada Island Prov	14	6	0	0	3	21%

FOOTNOTE

(1) North Cowichan Mun includes two policing jurisdictions: N Cowichan - Chemainus Mun and N Cowichan - Duncan Mun.

DATA QUALIFIERS

1. The offence data shown above have been recorded by the police on the Uniform Crime Reporting (UCR) surveys. Offences are scored according to the UCR Scoring Rules. If a single criminal incident contains a number of violations of the law, then, with the exception of Criminal Code Person offences, only the most serious one is recorded for UCR purposes. However, in British Columbia if a person is charged with impaired driving and fail or refuse to provide breath or blood sample, both offences will be scored and cleared by charge, but only the most serious offence of impaired driving will reflect persons charged data. The data shown in the column "Impaired Operation of Motor Vehicle or Over .08 and Failure or Refuse to Provide Blood or Breath Sample" reflects this scoring practice and as such does not double count number of persons charged.

2. The offence data shown above represents the number of persons charged as opposed to the actual number of offences. Due to the nature of Drinking Driving offences where an offence occurs and the offender is almost always apprehended at the scene of the offence, persons charged and actual number of offences roughly correspond. However, with non-traffic Criminal Code offences, an offence can occur, but it is less likely that the offender would be apprehended and charged. Therefore, if the actual number of Drinking Driving offences was taken as a percentage of the actual number of CC-Total + CC-Traffic offences, that ratio would be significantly less than the "Drinking Driving As A Percent of Total Criminal Code Including Traffic" ratios reflected in the above tables.

3. Criminal Code - Total includes Criminal Code - Property, Person and Other offences. Criminal Code - Property offences include break & enters, motor vehicle thefts, theft over and less than $1000, fraud, and possession of stolen property. Criminal Code - Person offences include violent crimes such as homicides, attempted murder, sexual and non sexual assaults, robbery, and abduction. Criminal Code - Other offences include prostitution, gaming and betting, possession of offensive weapons, as well as arson, bail violations, disturb the peace, and mischief and property damage.

DATA QUALIFIERS Cont'd

4. Criminal Code - Traffic includes: Dangerous Operation of Motor Vehicle - Causing Death; Dangerous Operation of Boat/Vessel/Aircraft - Causing Death; Dangerous Operation of Motor Vehicle Causing Bodily Harm; Dangerous Operation of Boat/Vessel/Aircraft - Causing Bodily Harm; Dangerous Operation of Motor Vehicle; Dangerous Operation of Boat/Vessel/Aircraft; Impaired Operation of Motor Vehicle - Causing Death; Impaired Operation of Boat/Vessel/Aircraft - Causing Death; Impaired Operation of Motor Vehicle - Causing Bodily Harm; Impaired Operation of Boat/Vessel/Aircraft - Causing Bodily Harm; Impaired Operation of Motor Vehicle or Over .08; Impaired Operation of Boat/Vessel/Aircraft or Over .08; Fail or Refuse to Provide Breath Sample; Fail or Refuse to Provide Blood Sample; Fail to Stop or Remain; and Driving Motor Vehicle While Prohibited.

5. Charged means the police filed a Report to Crown Counsel alleging an offence, but does not necessarily imply the swearing of an information or prosecution. Crown Counsel may return the case to police due to insufficient evidence, take no further action, or, in the case of young offenders, issue a letter of caution, or approve alternative measures.

SOURCE: Uniform Crime Reporting (UCR)

PREPARED BY: Police Services, Ministry of Solicitor General
DATE: August 2, 1988

SECTION 5

COUNTERATTACK PROGRAM

CounterAttack Police Roadcheck Statistics.
Spring, 1988 and Christmas, 1988-89.

Drinking Driving Media Coverage, 1988.

CounterAttack Research Data Sources:
Traffic Accident Report Forms (MV104).

CounterAttack Police Roadcheck Statistics.
Spring, 1988 and Christmas, 1988-89.

Province of
British Columbia

NEWS RELEASE

Ministry of Labour
and Consumer Services

88/06/03

DRAFT

Spring CounterAttack Results Announced

VICTORIA: Consumer Services Minister Lyall Hanson said today the spring CounterAttack police roadcheck campaign was the "most successful Spring campaign on record."

Hanson said the police checked 241,623 drivers during the April 13 - May 4 campaign, and laid 951 drinking-driving charges and more than 35,000 traffic-related charges.

"Compared to last year's spring campaign, the number of vehicles stopped increased by more than 23 per cent, while the percentage of alcohol-related accidents dropped from six per cent to 4.8 per cent. As an indication of the deterrent effect of the campaign, both those percentage rates are about half the average level."

Hanson commended the police and the public on their success in "raising public awareness of the serious issue of drinking and driving, and in reducing alcohol-related traffic accidents to this record-breaking level."

The CounterAttack Program and other drug and alcohol programs and initiatives were recently transferred from the Ministry of Attorney General to Labour and Consumer Services, where Hanson said they are being co-ordinated on a government-wide basis.

The Minister concluded: "The problem of drinking and driving is far from solved; in 1987 drinking drivers killed 231 people, injured 5,736, and cost the province more than $107 million in insurance, hospital and justice system costs -- not to mention the incalculable social and personal costs in terms of human suffering. We must continue to work together to combat British Columbia's most serious and costly crime."

-30-

Contact: Dr. Bill Mercer, Director, CounterAttack Program
Rick Stevens, 387-3194 Ed Wall, 387-3171

APRIL - MAY 1988 COUNTERATTACK ROADCHECK CAMPAIGN
INDEPENDENT POLICE FORCE DATA

LOCATION	A. FATAL COLL.	B. PERSONS KILLED	C. INJURY COLL.	D. PERSONS INJURED	E. PROPERTY DAMAGE COLL.	F. TOTAL CHARGES EXCLUDE G,I	G. DWI CHARGES	H. ALCOHOL RELATED COLL.	I. 24 HR.L PROHIB.	J. ROAD CHECK HOURS	K. PERSON HOURS	L. VEHICLES CHECKED	M. WRITTEN WARNINGS
INDEPENDENT FORCES													
Central Saanich	0	0	5	6	15	186	1	0	1	45	80	800	24
Delta	0	0	5	6	5	206	13	0	1	21	58	2,330	-
Esquimalt	0	0	5	6	22	31	6	1	9	24	48	700	0
Matsqui	0	0	34	-	69	111	16	-	20	16	69	2,235	33
Nelson City	0	0	2	2	14	10	4	1	4	12	28	1,103	20
New Westminster	1	1	19	23	108	87	19	5	55	66	272	11,495	8
Oak Bay	0	0	2	2	19	9	1	0	4	10	35	1,045	48
Port Moody	1	1	8	10	47	281	5	1	12	7	18	462	47
Saanich	0	0	39	-	102	632	8	1	19	6	20	981	32
Vancouver	3	3	221	275	1,520	-	130	35	109	120	600	33,000	-
Victoria	0	0	71	89	138	1,275	18	14	48	8	72	1,550	0
W. Vancouver	1	1	10	15	-	11	4	-	17	-	-	-	612
TOTAL	6	6	421	434	2,059	2,839	225	58	299	335	1,300	55,701	824

Note: "-" indicates no return for those forces. Consequently column totals for containing "-" are under-estimations.

APRIL - MAY 1988 COUNTERATTACK ROADCHECK CAMPAIGN
R.C.M.P. DATA, INDEPENDENT FORCES TOTAL, AND PROVINCIAL TOTAL

LOCATION	A. FATAL COLL.	B. PERSONS KILLED	C. INJURY COLL.	D. PERSONS INJURED	E. PROPERTY DAMAGE COLL.	F. TOTAL CHARGES EXCLUDE G,I	G. DWI CHARGES	H. ALCOHOL RELATED COLL.	I. 24 HR. PROHIB.	J. ROAD CHECK HOURS	K. PERSON HOURS	L. VEHICLES CHECKED	M. WRITTEN WARNINGS
R.C.M.P.													
DISTRICT 1													
Burnaby	1	1	39	67	153	1,615	29	9	74	282	594	5,225	596
Chilliwack	2	3	36	46	189	2,536	59	14	56	268	2,113	15,729	1,589
Coquitlam	-	-	59	86	190	1,467	22	4	24	52	176	5,500	145
Courtenay	1	1	69	96	283	2,375	57	22	117	384	703	16,582	951
North Van.	-	-	64	79	199	760	19	7	21	52	251	2,280	311
Richmond	-	-	57	69	192	947	36	9	15	41	194	5,925	649
Surrey	5	7	128	356	228	1,946	34	23	59	340	1,170	12,000	370
KAMLOOPS S/D	4	5	76	103	213	3,498	83	28	151	421	844	15,359	2,093
KELOWNA S/D	3	4	110	146	329	3,017	73	28	87	507	839	27,894	2,024
NELSON S/D	1	1	36	53	204	2,978	70	20	86	742	1,053	20,375	2,022
PRINCE GEORGE S/D	4	6	62	95	232	2,895	61	28	114	297	610	12,385	2,832
PRINCE RUPERT S/D	2	2	13	23	103	1,372	56	7	75	354	427	11,835	1,049
VANCOUVER S/D	2	2	105	157	378	4,963	82	35	146	668	1,753	23,845	1,670
VICTORIA S/D	-	-	84	104	264	1,837	65	23	65	380	960	10,788	857
RCMP TOTAL	25	32	938	1,480	3,157	32,206	746	257	1,090	4,788	11,687	185,922	17,158
INDEPENDENT TOTAL	6	6	421	434	2,059	2,839	225	58	299	335	1,300	55,701	824
PROVINCIAL TOTAL	31	38	1,359	1,914	5,216	35,045	971	315	1,389	5,123	12,987	241,623	17,982

Province of
British Columbia

NEWS RELEASE

Ministry of Labour
and Consumer Services

December 5, 1988

Christmas CounterAttack Roadcheck Blitz

Police throughout British Columbia will check up to 400,000 vehicles between December 8 and January 3 in this year's Christmas CounterAttack.

Labour and Consumer Services Minister Lyall Hanson said: "Individuals, communities, private businesses and Crown Corporations are all helping to reduce the tragedies caused by drinking-driving over the holiday period by giving their strong support to the campaign.

"For example, groups like ICBC, BC Transit, 7-11 Stores, the Lower Mainland Taxi Association, White Spot restaurants and the Canadian Armed Forces have joined with the police to help publicize this CounterAttack blitz. In addition, liquor stores, physicians, government agents, Autoplan Agents and hundreds of others will be displaying CounterAttack materials.

"With this unprecedented level of community support and the co-operation of the drivers of British Columbia, this holiday season could be the safest on record," concluded the Minister.

- 30 -

Contact: Rick Stevens 387-3194

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Province of
British Columbia

NEWS RELEASE

Ministry of Labour
and Consumer Services

January 30, 1989

Christmas CounterAttack a Record-Breaker

For the fifth year in a row, the month-long Christmas CounterAttack police roadcheck campaign has broken records with more vehicles checked and proportionally fewer drinking-driving charges being laid.

"We have never had a more successful Christmas CounterAttack campaign," said Lyall Hanson, Minister of Labour and Consumer Services and Minister responsible for the program.

Between December 8th and January 3rd, police throughout B.C. checked over 427,000 vehicles during approximately 5,300 roadcheck hours and only 1,011 drinking-driving charges were laid. This represents an increase of 24 per cent in the number of vehicles checked and a decrease of 25 per cent in the number of charges per vehicle stopped, compared to last year's figures.

"During the twelve years that the CounterAttack Program has been in place, British Columbians have shown an increased awareness of the problem of drinking and driving and the desire to work together to address the problem, Hanson said.

"We can all be proud of the fact that the percentage of alcohol-related casualty traffic accidents have been reduced by half during those years."

...2

This Christmas public support was at an unprecedented level. Private citizens, CounterAttack school groups, small and large businesses and the media all joined together to get across the message not to drink and drive. B.C. Transit's anti-drinking driving campaign was a good example of this co-operative effort.

The Insurance Corporation of B.C., government's long-time partner in CounterAttack, also played an essential role in making this year's campaign such a success.

Hanson said, "Individual and group efforts throughout the province were responsible for making this year's Christmas CounterAttack such a success and I am confident that if we all continue to work together to prevent drinking and driving, 1989 will be another record setting year."

-30-

For further information contact:

Ministry of Labour and Consumer Services
Rick Stevens 387-3194 / Rosa Munzer 387-3171

Drinking Driving CounterAttack
Bill Mercer 660-2525

or your local police department or detachment.

nrad0125

DECEMBER, 1988 - JANUARY 1989 COUNTERATTACK ROADCHECK CAMPAIGN
Independent Police Force Data

LOCATION	A. FATAL COLL.	B. PERSONS KILLED	C. INJURY COLL.	D. PERSONS INJURED	E. PROPERTY DAMAGE COLL.	F. TOTAL CHARGES EXCLUDE G,I	G. DWI CHARGES	H. ALCOHOL RELATED COLL.	I. 24 HR.L PROHIB.	J. ROAD CHECK HOURS	K. PERSON HOURS	L. VEHICLES CHECKED	M. WRITTEN WARNINGS
INDEPENDENT FORCES													
Central Saanich	1	1	5	6	11	146	1	6	3	40	80	650	32
Delta	0	0	1	1	1	49	1	0	6	15	52	2,090	*
Esquimalt	0	0	4	4	34	58	8	5	10	8.5	39	1,500	74
Matsqui	0	0	42	-	90	187	12	-	11	100	150	18,200	50
Nelson City	0	0	0	0	3	0	2	1	4	25	43	2,348	54
New Westminster	0	0	40	56	184	1,211	19	11	53	94	476	18,648	141
Oak Bay	0	0	2	2	14	48	2	2	2	9	40	1,600	14
Port Moody	0	0	6	8	52	12	4	2	11	4.75	125	795	27
Saanich	1	1	50	-	189	751	10	12	17	27	116	3,649	199
Vancouver	4	4	438	533	2,465	325	111	-	441	320	3,200	73,750	0
Victoria	1	1	52	65	145	1,588	35	9	112	30.25	126	7,520	72
W. Vancouver	1	1	36	48	123	197	12	4	25	28.50	89	4,544	6
TOTAL	8	8	676	723	3,311	4,572	217	52	695	702	4,536	135,294	669

Note: "*" indicates Delta does not issue written warnings.
"-" indicates no return for those forces. Consequently column totals for containing "-" are under-estimations.

DECEMBER 1988 - JANUARY 1989 COUNTERATTACK ROADCHECK CAMPAIGN
R.C.M.P. Data, Independent Forces Total, and Provincial Total

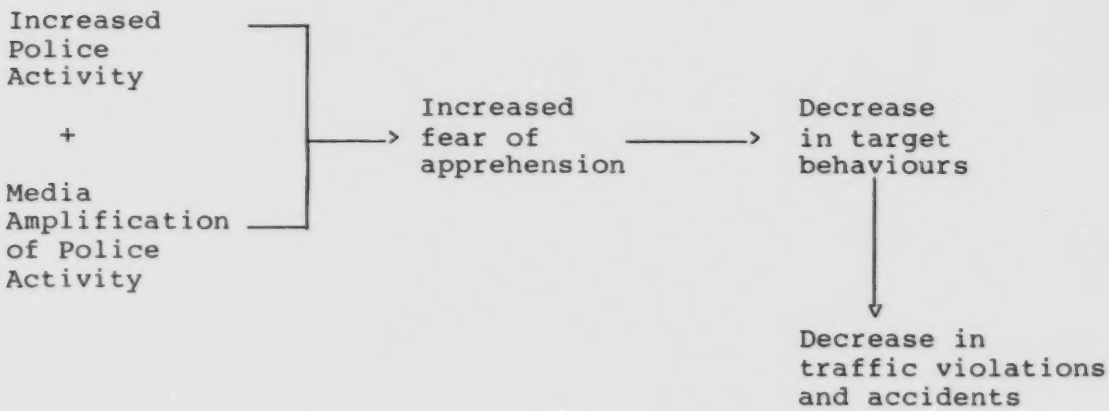
LOCATION	A. FATAL COLL.	B. PERSONS KILLED	C. INJURY COLL.	D. PERSONS INJURED	E. PROPERTY DAMAGE COLL.	F. TOTAL CHARGES EXCLUDE G,I	G. DWI CHARGES	H. ALCOHOL RELATED COLL.	I. 24 HR. PROHIB.	J. ROAD CHECK HOURS	K. PERSON HOURS	L. VEHICLES CHECKED	M. WRITTEN WARNINGS
R.C.M.P.													
DISTRICT 1													
Burnaby	0	0	95	118	370	1,847	15	24	38	221	202	7,955	811
Chilliwack	0	0	39	60	238	1,552	28	8	43	278	3,090	29,834	1,052
Coquitlam	3	3	44	51	184	850	28	4	-	85	200	7,360	480
Courtenay	0	0	102	137	411	2,159	73	36	98	443	965	28,204	1,225
North Van.	0	0	53	79	342	442	11	7	-	62	191	7,957	494
Richmond	1	2	75	117	282	889	20	14	56	68	272	20,800	929
Surrey	3	5	94	134	383	1,570	58	21	126	206	433	13,606	298
KAMLOOPS S/D	6	6	142	211	498	2,208	52	19	102	504	859	10,338	1,459
KELOWNA S/D	1	1	138	199	602	3,303	73	44	136	585	1,371	39,758	1,796
NELSON S/D	0	0	65	97	489	2,095	46	18	113	550	1,371	37,258	2,296
PRINCE GEORGE S/D	2	2	113	156	676	2,250	61	82	136	297	983	23,322	2,556
PRINCE RUPERT S/D	1	1	46	64	197	1,072	62	9	82	333	535	13,597	1,101
VANCOUVER S/D	4	5	173	227	786	4,239	85	42	138	590	1,469	28,743	1,942
VICTORIA S/D	3	4	106	150	499	2,355	51	36	84	429	1,600	23,168	1,147
RCMP TOTAL	24	29	1,285	1,800	5,962	26,831	663	364	1,152	4,651	13,541	291,900	17,536
INDEPENDENT TOTAL	8	8	676	723	3,311	4,572	217	52	695	702	4,536	135,294	669
PROVINCIAL TOTAL	32	37	1,961	2,523	9,273	31,403	880	416	1,847	5,353	18,077	427,194	18,205

NOTE: "-" indicates no return for those forces. Consequently column totals for containing "-" are under-estimations.

Drinking-driving Media Coverage, 1988.

CounterAttack and the Media:
Teamwork to Reduce Drinking Driving.

There is good evidence to show that a police traffic enforcement campaign can be effective in reducing target crimes if and only if the public is made aware of the campaign (Mercer, 1985, 1986a). The mechanism is:



In particular, community-level activities and advertisement of an enforcement campaign appears to be more effective than relying entirely on broad, province-wide mass media enforcement amplification. For example, in the "Kamloops Experiment" Spring CounterAttack 1984 (Mercer, 1986b), the public awareness of a police drinking-driving roadcheck campaign was brought to 51% from a pre-test value of 16%, through the use of community involvement techniques. On the other hand, the remainder of the province showed a post-test awareness of only 14% when only province-wide (as opposed to community level) media amplification of the campaign was utilized.

The CounterAttack Program and members of both the electronic and print media work together, especially during roadcheck campaigns, to make the public aware of the dangers of drinking and driving. One measure of this cooperation is the frequency of print articles on the issue that appear in newspapers throughout the province. These news "clips" can be divided into two types: written articles and "clipsheet" CounterAttack logos and messages that are supplied by the Program and then are printed through the generosity of the newspaper or magazine editors. A graph of print coverage for 1988 and an example of the public service clipsheet follow.

REFERENCES

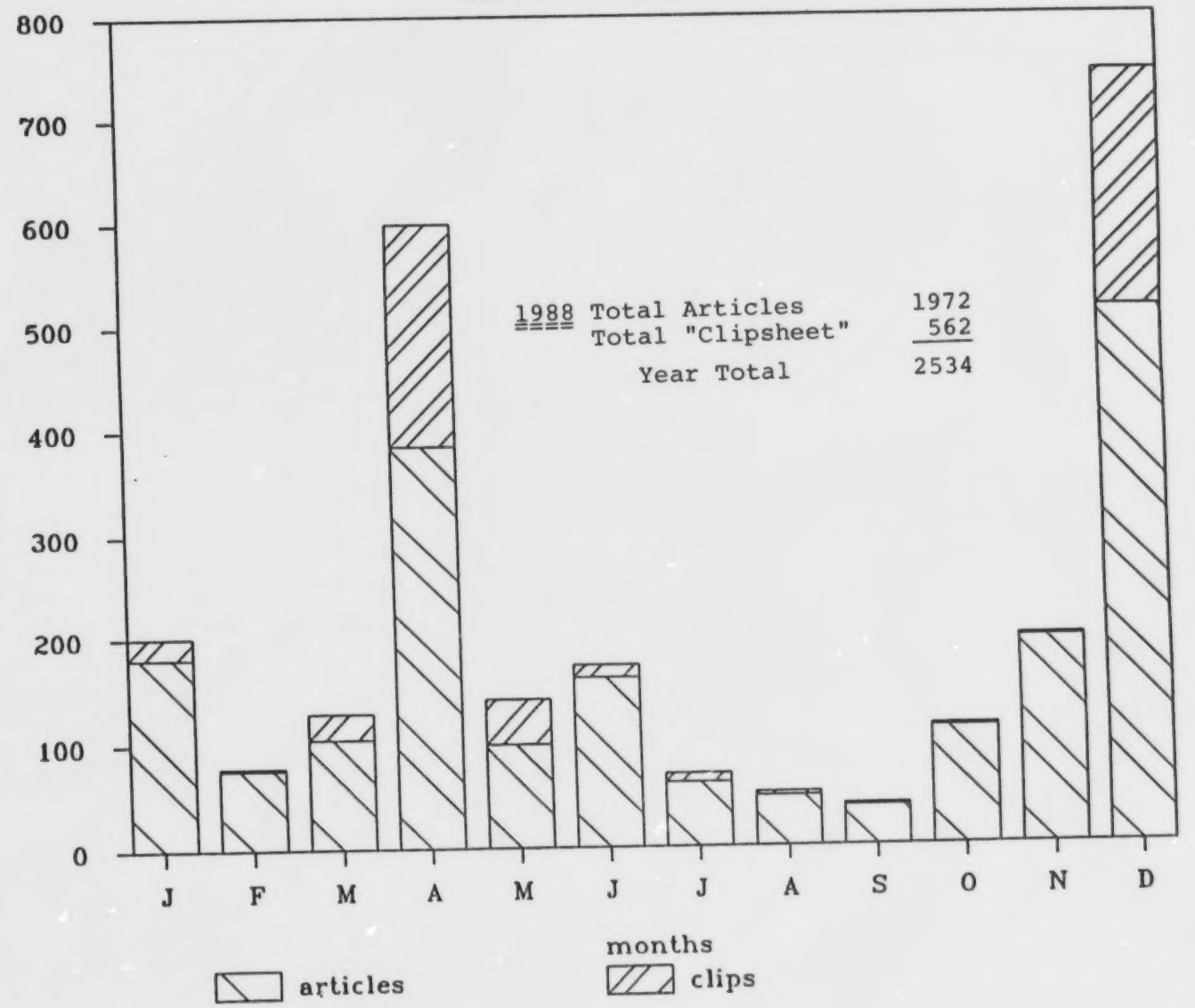
Mercer G.W. The relationship among driving while impaired charges, police drinking-driving roacheck activities, media coverage and alcohol-related casualty traffic accidents. Accident Analysis and Prevention, 17(6), 1985.

Mercer G.W. The effects of media coverage on a two-week police intersection traffic enforcement campaign. Royal Canadian Mounted Police Gazette, 48(12), 1986.

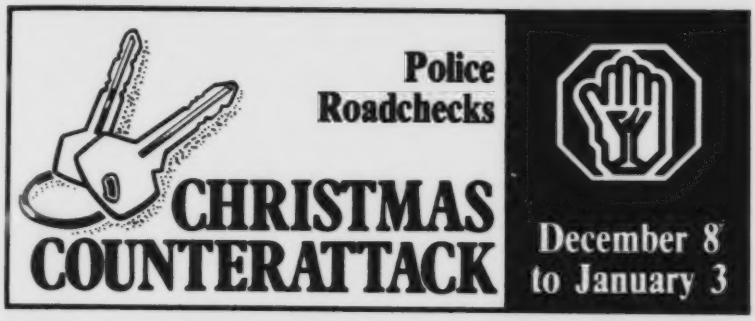
Mercer G.W. The Kamloops experiment: media amplification of a two-week drinking-driving police roadcheck enforcement campaign. In CounterAttack Traffic Research Papers, 1985, Ministry of Attorney General, British Columbia, 1986.

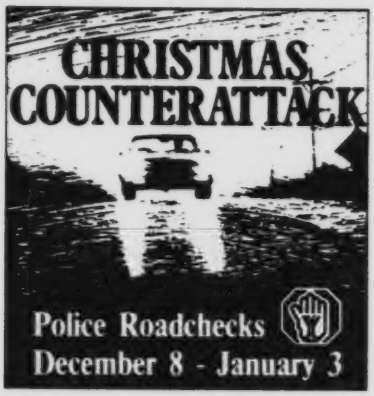
Print Media Count

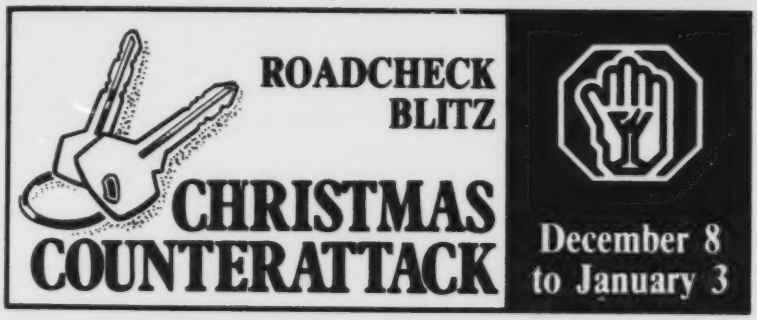
British Columbia, 1988.

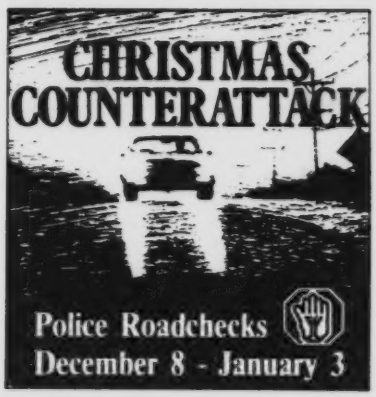


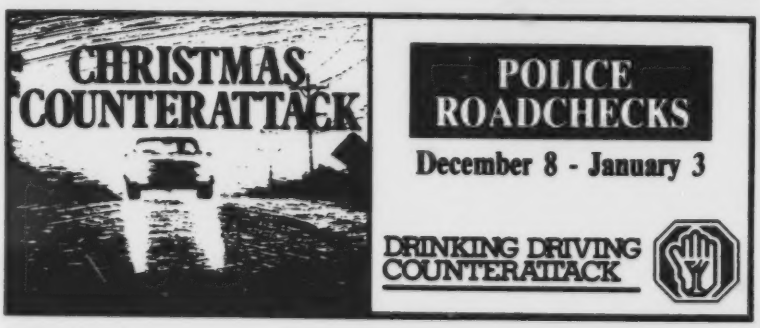
PUBLIC SERVICE CLIPSHEET, ISSUED FOR DRINKING DRIVING COUNTERATTACK ROADCHECK CAMPAIGN
DECEMBER 8 - JANUARY 3

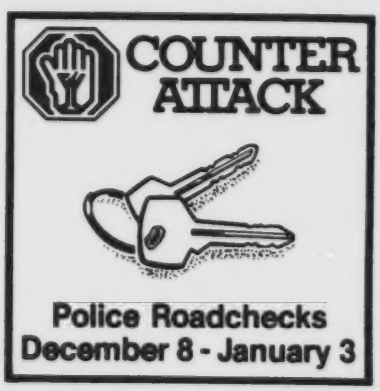


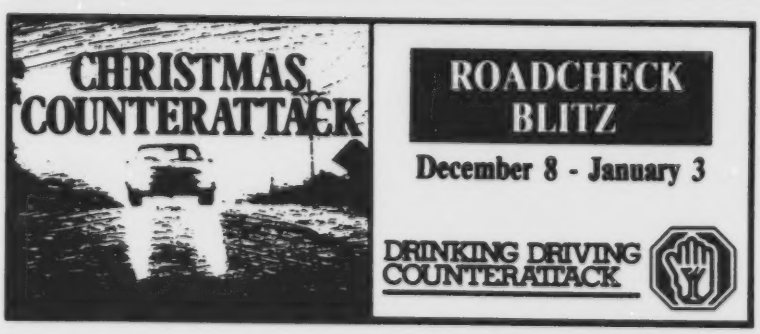












CounterAttack Research Data Sources:
Traffic Accident Report Forms (MV104)

A Note on the Reliability and Validity of Police Reporting of Alcohol Involvement in Casualty Traffic Accidents on the British Columbia Motor Vehicle Department Traffic Accident Report Form (MV104)*

Traffic Accident Report Forms (MV104) are completed by attending police officers at casualty traffic accidents in British Columbia. Analyses of these reports often form the basis for government policy decisions regarding traffic safety priorities, and therefore it is critical that there be a clear understanding of the extent and limits of their reliability and validity, especially with regard to the assessment of the role of alcohol in casualty accidents. This is of particular concern with regard to the CounterAttack Program, as much of the research for the program is done using MV104 data supplied by the Motor Vehicle Department of the Ministry of Transportation and Highways for British Columbia. Consequently, it is the purpose of this note to discuss these matters.

Definition of Terms - Reliability and Validity:

Before examining this subject, perhaps it would be useful to distinguish between reliability and validity: reliability refers to how consistently a thing measures, while validity refers to how closely that measurement coincides with the true value of what is measures. For example, suppose one had a thermometer that underestimated temperature to some unknown degree. If one used that thermometer to measure temperature from day to day, one could accurately determine the number of degrees change from day

* First published in CounterAttack Traffic Research Papers, 1984, Ministry of Attorney General, British Columbia, 1985.

to day, yet would not be able to say what the actual temperature was. Because the same instrument was used in the same fashion from day to day, the resulting measures would be reliable, but the measure of temperature on any given day would not be valid, because of the error in the thermometer (i.e. underestimation). On the other hand, the degree of temperature change measured from day to day would be a valid measure.

Finally, if one could gain access to a thermometer that was know to give accurate (i.e. valid) temperature readings, then one could calibrate the inaccurate one to the accurate one and from then on use the inaccurate thermometer to get an accurate reading (e.g. if the inaccurate one was constantly 4 degrees less than the actual temperature, then simply taking the inaccurate reading and adding 4 degrees would produce a valid reading.) As is shown below, this analogy applies directly to the MV104 data.

MV104 Reliability:

It is reasonable to assume that alcohol as a contributing factor as indicated on the MV104 is a reliable measure, as these forms have been completed by the same sort of person (attending police officer) using the same instruction manual under the same conditions (casualty traffic accident) since 1977.

MV104 Validity in Measuring Change:

If one makes the reasonable assumption that the overall MV104 reporting of alcohol as a contributing factor to the accident is reliable, then it is also a valid measure of change over time. That is, a reported percent change from month to

month and year to year can be seen as a more-or-less true reflection of change in the rates of alcohol involvement in casualty traffic accidents, even though the reported levels may not accurately reflect the true levels of alcohol involvement.

MV104 Validity in Measuring Alcohol Involvement:

How closely the MV104 reports of alcohol as a contributing factor to casualty traffic accidents reflect actual levels of alcohol involvement in these accidents is a difficult question, as it very much depends on both the definition of "alcohol involvement" used and whether or not one is referring to a fatal or injury-only accident. In addition, there is a real problem in finding reliable and valid measures of alcohol involvement, however defined, with which to compare the MV104 reports.

Fatal Traffic Accidents: In B.C. fatal traffic accidents comprise about 2% of all police investigated casualty traffic accidents. One source of alcohol data comes from coroner's reports. However, there are a number of aspects of coroner's reports that make them difficult to compare to the MV104 assessment of alchol as a significant contributing factor to these accidents. First, not all drivers killed have toxicologies done or reported. Certainly, it is more likely that a toxicology will be done on a driver who is dead on arrival to hospital or shortly thereafter, but these drivers tend to come from high-speed (and therefore more violent) accidents which in turn have been shown to be those accidents most likely to be alcohol-related. Second, a toxicology reports the presence or absence of alcohol at thus-and-such a level, while the police are reporting not presence or

absence but rather whether or not alcohol was a significant contributing factor to the accident. Finally, it is arguably more difficult for an attending officer to assess the role and/or presence of alcohol from a dying or dead victim than it could be if the person were less severely injured.

For all the above reasons, one would expect that the proportion of fatal traffic accidents where the investigating officers consider alcohol to be a causal (i.e. contributing) factor to be substantially less than the proportion of fatal accidents where the coroner reports alcohol to be present. In fact, in 1983 the B.C. Coroner reported that 50% of the drivers killed showed toxicological evidence of having consumed alcohol, while the MV104 data indicated that alcohol was considered to be a significant contributing factor to about 36% of fatal accidents.

Injury-only Traffic Accidents: Injury-only casualty traffic accidents comprise about 98% of all casualty accidents in B.C. The only source of alcohol data (other than MV104) for these accidents comes from a CounterAttack study done in 1977-78 on injured persons entering the Royal Columbian Hospital. That study indicated that 26% of those drivers tested had a Blood Alcohol Content (BAC) of .08 or greater, and 14% had a BAC of .15 or greater, while the police estimated that alcohol was the primary single cause of the accident in 17% of the cases. Exactly how one reconciles these figures is open to question.

An Overview:

Using American police and coroners' reports, J.C. Fell in Tracking the Alcohol Involvement Problem in U.S. Highway Crashes (27th Annual Proceedings, American Association for Automotive

Medicine, 1983) notes that when the police designate a driver to have alcohol involvement, they are in error about 5% of the time. He also indicates that, using both coroner and police data in combination, nationally alcohol was involved in 55-58% of fatal accidents, 17% of injury-only accidents, 8% of property-damage-only accidents, and 11% of all accidents. However, the problem of the role of alcohol and how it relates to these figures is still unanswered. The presence or absence of alcohol, except at very high BAC levels, does not necessarily guarantee it a role in the cause of the accident. It is clear from this discussion that the police, when judging the role of alcohol as a contributing factor to casualty traffic accidents, produce figures which are less than those which speak to the presence or absence of alcohol, and that their figures on causation show a greater difference for fatal accidents (which comprise about 2% of their accident investigation burden) than for injury-only accidents (which comprise about 98% of their accident investigation burden).

While it is important to more precisely determine the magnitude of the difference between the police judgement of alcohol as a causative factor and the presence of alcohol --and this can only be done through ongoing hospital and coroner studies-- two things can be suggested concerning alcohol as a significant contributing factor in casualty accidents as indicated on the Traffic Accident Report Form (MV104) completed by the attending officer at these accidents: first, that the MV104 data can

probably be taken as an accurate (i.e. reliable and valid) indicator of changes in the rate of alcohol involvement over time. And second, that the police data are probably a reasonable indicator of both the role and presence of alcohol in injury-only accidents, however, can only be seen as a measure of the role, not absolute chemical presence or level, of alcohol in fatal traffic accidents.

Finally, perhaps the only way to detemine this level of accuracy for the B.C. police forces is to change the MV104 so that they are required not only to judge whether or not alcohol played a significant role in the accident under investigation, but also to judge its presence or absence.

SECTION 6

APPENDICES

Appendix A: Canadian Criminal Code and British Columbia Motor Vehicle Act Legislation on Drinking Driving.

Appendix B: Executive Summary of CounterAttack Traffic Research Papers, 1987.

APPENDIX A

Canadian Criminal Code and British Columbia Motor Vehicle Act
Legislation on Drinking Driving.

Canadian Criminal Code Legislation

253. Every one commits an offence who operates a motor vehicle or vessel or operates or assists in the operation of an aircraft or has the care or control of a motor vehicle, vessel or aircraft whether it is in motion or not,

(a) while his ability to operate the vehicle, vessel or aircraft is impaired by alcohol or a drug; or

(b) having consumed alcohol in such a quantity that the concentration thereof in his blood exceeds eighty milligrams of alcohol in one hundred millitres of blood.

254. (1) In this section and sections 255 to 258,

"analyst" means a person designated by the Attorney General as an analyst for the purposes of section 258;

"approved container" means

(a) in respect of breath samples, a container of a kind that is designed to receive a sample of the breath of a person for analysis and is approved as suitable for the purposes of section 258 by order of the Attorney General of Canada; and

(b) in respect of blood samples, a container of a kind that is designed to receive a sample of the blood of a person for analysis and is approved as suitable for the purposes of section 258 by order of the Attorney General of Canada;

"approved instrument" means an instrument of a kind that is designed to receive and make an analysis of a sample of the breath of a person in order to measure the concentration of alcohol in the blood of that person and is approved as suitable for the purposes of section 258 by order of the Attorney General of Canada;

"approved screening device" means a device of a kind that is designed to ascertain the presence of alcohol in the blood of a person and that is approved for the purposes of this section by order of the Attorney General of Canada;

"qualified medical practitioner" means a person duly qualified by provincial law to practise medicine;

"qualified technician" means,

(a) in respect of breath samples, a person designated by the Attorney General as being qualified to operate an approved instrument, and

(b) in respect of blood samples, any person or person of a class of persons designated by the Attorney General as being qualified to take samples of blood for the purposes of this section and sections 256 and 258.

Canadian Criminal Code Legislation

(2) Where a peace officer reasonably suspects that a person who is operating a motor vehicle or vessel or operating or assisting in the operation of an aircraft or who has the care or control of a motor vehicle, vessel or aircraft, whether it is in motion or not, has alcohol in his body, the peace officer may, by demand made to that person, require that person to provide forthwith such a sample of his breath as in the opinion of the peace officer is necessary to enable a proper analysis of his breath to be made by means of an approved screening device and, where necessary, to accompany the peace officer for the purpose of enabling such a sample of his breath to be taken.

(3) Where a peace officer believes on reasonable and probable grounds that a person is committing, or at any time within the preceding two hours has committed, as a result of the consumption of alcohol, an offence under section 253, the peace officer may, by demand made to that person forthwith or as soon as practicable, require that person to provide then or as soon thereafter as is practicable

(a) such samples of the person's breath as in the opinion of a qualified technician, or

(b) where the peace officer has reasonable and probable grounds to believe that, by reason of any physical condition of the person,

(i) the person may be incapable of providing a sample of his breath, or

(ii) it would be impracticable to obtain a sample of his breath,

such samples of the person's blood, under the conditions referred to in subsection (4), as in the opinion of the qualified medical practitioner or qualified technician taking the samples

are necessary to enable proper analysis to be made in order to determine the concentration, if any, of alcohol in the person's blood, and to accompany the peace officer for the purpose of enabling such samples to be taken.

(4) Samples of blood may only be taken from a person pursuant to a demand made by a peace officer under subsection (3) if the samples are taken by or under the direction of a qualified medical practitioner and the qualified medical practitioner is satisfied that the taking of such samples would not endanger the life or health of the person.

(5) Every one commits an offence who, without reasonable excuse, fails or refuses to comply with a demand made to him by a peace officer under this section.

(6) A person who is convicted of an offence committed under subsection (5) for a failure or refusal to comply with a demand made under subsection 2 or paragraph (3)(a) or (b) in respect of any transaction, may not be convicted of another offence committed under subsection (5) in respect of the same transaction.

Canadian Criminal Code Legislation

255. (1) Every one who commits an offence under section 253 or 254 is guilty of an indictable offence or an offence punishable on summary conviction and is liable,

(a) whether the offence is prosecuted by indictment or punishable on summary conviction, to the following minimum punishment, namely,

(i) for a first offence, to a fine of not less than three hundred dollars,

(ii) for a second offence, to imprisonment for a term not exceeding not less than fourteen days, and

(iii) for each subsequent offence, to imprisonment for a term not exceeding not less than ninety days;

(b) where the offence is prosecuted by indictment, to imprisonment for a term not exceeding five years; and

(c) where the offence is punishable on summary conviction, to imprisonment for a term not exceeding six months.

(2) Every one who commits an offence under paragraph 253(a) and thereby causes bodily harm to any other person is guilty of an indictable offence and is liable to imprisonment for a term not exceeding ten years.

(3) Every one who commits an offence under paragraph 253(a) and thereby causes the death of any other person is guilty of an indictable offence and is liable to imprisonment for a term not exceeding fourteen years.

(4) Where a person is convicted of an offence committed under paragraph 253(a) or (b) or subsection 254(5), that person shall, for the purposes of this Act, be deemed to be convicted for a second or subsequent offence, as the case may be, if he has previously been convicted of

(a) an offence committed under any of those provisions;

(b) an offence under subsection (2) or (3); or

(c) an offence under section 250, 252, 252, 253, 259, or or 260 or subsection 258(4) of this Act as this Act read immediately before the coming into force of this subsection.

(5) Nothwithstanding subsection 736.1(1), a court may, instead of convicting a person of an offence committed under section 253, after hearing medical or other evidence, if it considers that the person is in need of curative treatment in relation to his consumption of alcohol or drugs and that it would not be contrary to the public interest, by order direct that the person be discharged under section 736 on the conditions prescribed in a probation order, including a condition respecting his attendance for curative treatment in relation to his consumption of alcohol or drugs.

256. (1) Subject to subsection (2), where a justice is satisfied, on an information on oath in Form 1 or on an

information on oath submitted to the justice pursuant to section 487.1 by telephone or other means of telecommunication, that there are reasonable grounds to believe that

(a) a person has, within the preceding two hours, committed, as a result of the consumption of alcohol, an offence under section 253 and that person was involved in an accident resulting in the death of, or bodily harm to, any person, and

(b) a qualified medical practitioner is of the opinion that

(i) by reason of any physical or mental condition of the person that resulted from the consumption of alcohol, the accident or any other occurrence related to or resulting from the accident, the person is unable to consent to the taking of samples of his blood, and

(ii) the taking of samples of blood from the person would not endanger the life or health of the person,

the justice may issue a warrant authorizing a peace officer to require a qualified medical practitioner to take, or to cause to be taken by a qualified technician under the direction of the qualified medical practitioner, such samples of the blood of the person as in the opinion of the person taking the samples are necessary to enable a proper analysis to be made in order to to determine the concentration, if any, of alcohol in his blood.

(2) A warrant issued pursuant to subsection (1) may be in Form 5 or 5.1 varied to suit the case.

(3) Notwithstanding paragraphs 487.1(4)(b) and (c) an information on oath submitted by telephone or other means of telecommunication for the purposes of this section shall include, instead of the statements referred to in those paragraphs, a statement setting out the offence alleged to have been committed and identifying the person from whom blood samples are to be taken.

(4) Samples of blood may be taken from a person pursuant to a warrant issued pursuant to subsection (1) only during such time as a qualified medical practitioner is satisfied that the conditions referred to in subparagraphs (1)(b)(i) and (ii) continue to exist in respect of that person.

(5) Where a warrant issued pursuant to subsection (1) is executed, the peace officer shall, as soon as practicable thereafter, give a copy or, in the case of a warrant issued by telephone or other means of telecommunication, a facsimile of the warrant to the person from whom the blood samples were taken.

257. (1) No qualified medical practitioner or qualified technician is guilty of an offence only by reason of his refusal

to take a sample of blood from a person for the purposes of section 254 of 256 and no qualified medical practitioner is section 256 and no qualified technician acting under the direction of a qualified medical practitioner incurs any criminal or civil liability for anything necessarily done with reasonable care and skill in the taking of such a sample of blood.

258. (1) In any proceedings under subsection 255(1) in respect of an offence committed under section 253 or in any proceedings under subsection 255(2) or (3),

(a) where it is proved that the accused occupied the seat or position ordinarily occupied by a person who operates a motor vehicle, vessel or aircraft or who assists in the operation of an aircraft, the accused shall be deemed to have had the care or control of the vehicle, vessel or aircraft, as the case may be, unless the accused establishes that he did not occupy that seat or position for the purpose of setting the vehicle, vessel or aircraft in motion or assisting in the operation of the aircraft, as the case may be;

(b) the result of an analysis of a sample of the breath or blood of the accused (other than a sample taken pursuant to a demand made under subsection 254(3)) or of the urine or other bodily substance of the accused may be admitted in evidence notwithstanding that, before the accused gave the sample, he was not warned that he need not give the sample or that the result of the analysis of the sample might be used in evidence;

(c) where samples of the breath of the accused have been taken pursuant to a demand made under subsection 254(3), if

(i) at the time each sample was taken, the person taking the sample offered to provide to the accused a specimen of the breath of the accused in an approved container for his own use, and, at the request of the accused made at that time, such a specimen was thereupon provided to the accused,

(ii) each sample was taken as soon as practicable after the time when the offence was alleged to have been committed and, in the case of the first sample, not later than two hours after that time, with an interval of at least fifteen minutes between the times when the samples were taken,

(iii) each sample was received from the accused directly into an approved container or into an approved instrument operated by a qualified technician, and

(iv) an analysis of each sample was made by means of an approved instrument operated by a qualified technician,

Canadian Criminal Code Legislation

evidence of the results of the analyses so made is, in the absence of evidence to the contrary, proof that the concentration of alcohol in the blood of the accused at the time when the offence was alleged to have been committed was, where the results of the analyses are the same, the concentration determined by the analyses and, where the results of the analyses are different, the lowest of the concentrations determined by the analyses;

(d) where a sample of the blood of the accused has been taken pursuant to a demand made under subsection 254(3) or otherwise with the consent of the accused or pursuant to a warrant issued under section 256, if

(i) at the time the sample was taken, the person taking the sample took an additional sample of the blood of the accused and one of the samples was retained, to permit an analysis thereof to the made by or on behalf of the accused and, at the request of the accused made within three months from the taking of the samples, one of the samples was ordered to be released pursuant to subsection (4),

(ii) both samples referred to in subparagraph (i) were taken as soon as practicable after the time when the offence was alleged to have been committed and in any event not later than two hours after that time,

(iii) both samples referred to in subparagraph (i) were taken by a qualified medical practitioner or a qualified technician under the direction of a qualified medical practitioner,

(iv) both samples referred to in subparagraph (i) were received from the accused directly into, or placed directly into, approved containers that were subsequently sealed, and

(v) an analysis was made by an analyst of at least one of the samples that was contained in a sealed approved container,

evidence of the result of the analysis is, in the absence of evidence to the contrary, proof that the concentration of alcohol in the blood of the accused at the time when the offence was alleged to have been committed was the concentration determined by the analysis or, where more than one sample was analyzed and the results of the analyses are the same, the concentration determined by the analyses and, where the results of the analyses are different, the lowest of the concentrations determined by the analyses;

(e) a certificate of an analyst stating that the analyst has made an analysis of a sample of the blood, urine, breath or other bodily substance of the accused and stating the result of that analysis is evidence of the facts alleged in the certificate without proof of the signature or the official character of the person appearing to have signed the certificate;

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(f) a certificate of an analyst stating that the analyst has made an analysis of a sample of an alcohol standard that is identified in the certificate and intended for use with an approved instrument and that the sample of the standard analyzed by the analyst was found to be suitable for use with an approved instrument, is evidence that the alcohol standard so identified is suitable for use with an approved instrument without proof of the signature or the official character of the person appearing to have signed the certificate;
(g) where samples of the breath of the accused have been taken pursuant to a demand made under subsection 254(3), a certificate of a qualified technician stating
(i) that the analysis of each of the samples has been made by means of an approved instrument operated by the technician and ascertained by the technician to be in proper working order by means of an alcohol standard, identified in the certificate, that is suitable for use with an approved instrument,
(ii) the results of the analyses so made, and
(iii) if the samples were taken by the technician,
(A) that at the time each sample was taken the technician offered to provide the accused with a specimen of the breath of the accused in an approved container for his own use and, at the request of the accused made at that time, the accused was thereupon provided with such a specimen
(B) the time when and place where each sample and any specimen described in clause (A) was taken, and
(C) that each sample was received from the accused directly into an approved container or into an approved instrument operated by the technician,
is evidence of the facts alleged in the certificate without proof of the signature or the official character of the person appearing to have signed the certificate;
(h) where a sample of the blood of the accused has been taken pursuant to a demand made under subsection 254(3) or otherwise with the consent of the accused or pursuant to a warrant issued under section 256,
(i) a certificate of a qualified medical practitioner stating that
(A) the medical practitioner took the sample and that before the sample was taken he was of the opinion that the taking of blood samples from the accused would not endanger

Canadian Criminal Code Legislation

the life or health of the accused and, in the case of a demand made pursuant to a warrant issued pursuant to section 256, that by reason of any physical or mental condition of the accused that resulted from the consumption of alcohol, the accident or any other occurrence related to or resulting from the accident, the accused was unable to consent to the taking of his blood,

(B) at the time the sample was taken, the medical practitioner took an additional sample of the blood of the accused to permit an analysis of one of the samples to be made by or on behalf of the accused,

(C) the time when and place where both samples referred to in clause (B) were taken, and

(D) both samples referred to in clause (B) were received from the accused directly into, or placed directly into, approved containers that were subsequently sealed and that are identified in the certificate,

(ii) a certificate of a qualified medical practitioner stating that the medical practitioner caused the sample to be taken by a qualified technician under his direction and that before the sample was taken the qualified medical practitioner was of the opinion referred to in clause (i)(A), or

(iii) a certificate of a qualified technician stating that the technician took the sample and the facts referred to in clauses (i)(B) to (D)

is evidence of the facts alleged in the certificate without proof of the signature or official character of the person appearing to have signed the certificate; and

(i) a certificate of an analyst stating that the analyst has made an analysis of a sample of the blood of the accused that was contained in a sealed approved container identified in the certificate, the date on which and place where the sample was analyzed and the result of that analysis is evidence of the facts alleged in the certificate without proof of the signature or official character of the person appearing to have signed it.

(2) No person is required to give a sample of urine or other bodily substance for analysis for the purposes of this section except breath or blood as required under section 254, and evidence that a person failed or refused to give such a sample or that such a sample was not taken is not admissible nor shall such a failure or refusal or the fact that a sample was not taken be subject of comment by any person in the proceedings.

Canadian Criminal Code Legislation

(3) In any proceedings under subsection 255(1) in respect of an offence committed under paragraph 253(a) or in any proceedings under subsection 255(2) or (3), evidence that the accused, without reasonable excuse, failed or refused to comply with a demand made to him by a peace officer under section 254 is admissible and the court may draw an inference therefrom adverse to the accused.

(4) A judge of a superior court of criminal jurisdiction or a court of criminal jurisdiction shall, on the summary application of the accused made within three months from the day on which samples of the blood of the accused were taken, order the release of one of the samples for the purpose of an examination or analysis thereof, subject to such terms as appear to be necessary or desirable to ensure the safeguarding of the sample and its preservation for use in any proceedings in respect of which it was retained.

(5) Where a sample of blood of an accused has been taken pursuant to a demand made under subsection 254(3) or otherwise with the consent of the accused or pursuant to a warrant issued under section 256, the sample may be tested for the presence of drugs in the blood of the accused.

(6) A party against whom a certificate described in paragraph (1)(e), (f), (g), (h) or (i) is produced may, with leave of the court, require the attendance of the qualified medical practitioner, analyst or qualified technician, as the case may be, for the purposes of cross-examination.

(7) No certificate shall be received in evidence pursuant to paragraph (1)(e), (f), (g), (h) or (i) unless the party intending to produce it has, before the trial, given to the other party reasonable notice of his intention and a copy of the certificate.

259. (1) Where an offender is convicted or discharged under section 736 of an offence committed under section 253 or 254 and, at the time the offence was committed or, in the case of an offence committed under section 254, within the two hours preceding that time, was operating or had the care or control of a motor vehicle or vessel or an aircraft or was assisting in the operation of an airecraft, the court that sentences the offender shall, in addition to any other punishment that may be imposed for that offence, make an order prohibiting the offender from operating a motor vehicle on any street, road, highway or other public place, a vessel or an aircraft, as the case may be,

(a) for a first offence, during a period of not more than three years and not less than three months;
(b) for a second offence, during a period of not more than three years and not less than six months, and
(c) for each subsequent offence, during a period of not more than three years and not less than one year.

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(2) Where an offender is convicted or discharged under section 736 of an offence under section 220, 221, 236, 249, 250, 251, 252 or this section or subsection 255(2) or (3) committed by means of a motor vehicle, vessel or aircraft, the court that sentences the offender may, in addition to any other punishment that may be imposed for that offence, make an order prohibiting the offender from operating a motor vehicle on any street, road, highway or other public place, a vessel or an aircraft, as the case may be,

(a) during any period that the court considers proper, if the offender is liable to imprisonment for life in respect of that offence;

(b) during any period not exceeding ten years, if the offender is liable to imprisonment for a term not exceeding more than five years but less than life in respect of that offence, and

(c) during any period not exceeding three years, in any other case.

(3) No order made under subsection (1) or (2) shall operate to prevent any person from acting as master, mate or engineer of a vessel that is required to carry officers holding certificates as master, mate or engineer.

(4) Everyone who operates a motor vehicle, vessel or air craft in Canada while he is disqualified from doing so

(a) is guilty of an indictable offence and liable to imprisonment for a term not exceeding two years; or

(b) is guilty of an offence punishable on summary conviction.

(5) For the purpose of this section, "disqualification" means

(a) a prohibition from operating a motor vehicle, vessel or aircraft ordered pursuant to subsection (1) or (2); or

(b) a disqualification or any other form of legal restriction or the right or privilege to operate a motor vehicle, vessel or aircraft imposed

(i) in the case of a motor vehicle, under the law of a province, or

(ii) in the case of a vessel or an aircraft, under an Act of Parliament,

in respect of a conviction or discharge under section 736 of any offence referred to in subsection (1) or (2). R.S.C. 1985, c.27 (1st Supp.), s.36.

260. (1) Where a court makes a prohibition order under subsection 259(1) or (2) in relation to an offender, it shall cause

(a) the order to be read by or to the offender;

(b) a copy of the order to be given to the offender; and

(c) the offender to be informed of subsection 242(4).

Canadian Criminal Code Legislation

(2) After subsection (1) has been complied with in relation to an offender who is bound by an order referred to in that subsection, the offender shall endorse the order, acknowledging receipt of a copy thereof and that the order has been explained to him.

(3) The failure of an offender to endorse an order pursuant to subsection (2) does not affect the validity of the order.

(4) In the absence of evidence to the contrary, where it is proved that a disqualification referred to in paragraph 259(5)(b) has been imposed on a person and that notice of the disqualification has been mailed by registered or certified mail to that person, that person shall, after five days following the mailing of the notice, be deemed to have received the notice and to have knowledge of the disqualification, of the date of its commencement and of its duration.

(5) In proceedings under section 259, a certificate setting out with reasonable particularity that a person is disqualified from

(a) driving a motor vehicle in a province, purporting to be signed by the registrar of motor vehicles for that province, or

(b) operating a vessel or aircraft, purporting to be signed by the Minister of Transport or any person authorized by the Minister of Transport for that purpose

is evidence of the facts alleged therein without proof of the signature or official character of the person by whom it purports to be signed.

(6) Subsection (5) does not apply in any proceedings unless at least seven days notice in writing is given to the accused that it is intended to tender the certificate in evidence.

(7) In subsection (5), "registrar of motor vehicles" includes the deputy of that registrar and any other person or body, by whatever name or title designated, that from time to time performs the duties of superintending the registration of motor vehicles in the province.

British Columbia Motor Vehicle Act Sections

24 hour prohibition

214. (1) In this section "driver" includes a person having the care or control of a motor vehicle on a highway or industrial road whether or not the motor vehicle is in motion.

(2) A peace officer may, at any time or place on a highway or industrial road when he has reason to suspect that the driver of a motor vehicle has consumed alcohol, request the driver to drive the motor vehicle, under the directon of the peace officer, to the nearest place off the travelled portion of the highway or industrial road and there to surrender his driver's licence.

(3) A peace officer may, at any time or place on a highway or industrial road when he believes that a driver's ability to drive a motor vehicle is affected by a drug, other than alcohol, request the driver to drive the motor vehicle, under the direction of the peace officer, to the nearest place off the travelled portion of the highway or industrial road and there to surrender his driver's licence.

(4) Where a peace officer requests a driver to surrender his driver's licence under this section, the driver shall forthwith surrender to the peace officer his driver's licence issued under this Act or any document issued in another jurisdiction that allows him to drive or operate a motor vehicle.

(5) Unless the prohibition from driving a motor vehicle is terminated under subsection (6),(7), or (8), the driver is automatically prohibited from driving a motor vehicle for a period of 24 hours from the time the peace officer requested the surrender of the driver's licence.

(6) Where a driver, who is requested to surrender his driver's licence under subsection (2), forthwith requests the peace officer to administer and does undergo as soon as practicable a test that indicates that his blood alcohol level does not exceed 50 mg. of alcohol in 100 mL. of blood, the prohibition from driving is terminated.

(7) Where a driver who is requested to surrender his driver's licence under subsection (2) produces, to a peace officer having charge of the matter, a certificate of a medical practitioner that

(a) states that the blood alcohol level of the driver did not exceed 50 mg. of alcohol in 100 ml. of blood at the time the certificate was signed, and

(b) was signed after he was prohibited from driving,

the prohibition is terminated.

(8) Where a driver, who is requested to surrender his driver's licence under subsection (3), satisfies a peace officer having charge of the matter that his ability to drive a motor vehicle is not affected by a drug, other than alcohol, the prohibition from driving is terminated.

(9) A peace officer acting under subsection (2) need not hold the opinion that the blood alcohol level of the driver exceeds 50 mg. of alcohol in 100 mL. of blood.

British Columbia Motor Vehicle Act Sections

(10) Where a peace officer prohibits a person from driving a motor vehicle under this section, the peace officer shall cause a report of the prohibition to be delivered to the superintendent unless the prohibition from driving a motor vehicle is terminated under subsection (6).

(11) The report referred to in subsection (10) shall be in a form established by the superintendent.

1982-36-32, proclaimed effective September 1, 1982

Driving with more than 80 milligrams of alcohol in blood.

220.1 (1) Everyone who, on a highway or industrial road, drives a motor vehicle or has the care or control of a motor vehicle, whether it is in motion or not, having consumed alcohol in such a quantity that the proportion thereof in his blood exceeds 80 milligrams of alcohol in 100 millilitres of blood, commits an offence and is liable on conviction to a fine of not less than $100 and not more than $2,000 or to imprisonment for not less than 7 days and not more than 6 months, or both.

(2) A person who is convicted of an offence under subsection (1) is automatically and without notice prohibited from driving a motor vehicle for 6 months as provided under section 92.

1982-73-2, proclaimed effective October 1, 1983

Demand for blood sample

220.2 (1) Where a peace officer on reasonable and probable grounds believes that a person has,

(a) within the preceding 2 hours, driven a motor vehicle or had the care or control of a motor vehicle on a highway or industrial road, and

(b) consumed alcohol,

he may, by demand made to that person forthwith or as soon as practicable, require him to provide then or as soon thereafter as is practicable a sufficient sample of his blood, as in the opinion of the person taking the sample is necessary, to enable a proper analysis to be made in order to determine the proportion, if any, of alcohol in his blood, and to accompany the peace officer for the purpose of enabling that sample to be taken.

(2) Where the person referred to in subsection (1) is incapable, due to physical or mental trauma, of comprehending the nature of a demand under subsection (1), a sufficient sample of his blood, as in the opinion of the person taking the sample is necessary, to enable a proper analysis to be made in order to determine the proportion, if any, of alcohol in his blood, may be taken from that person without a demand being made under subsection (1).

British Columbia Motor Vehicle Act Sections

(3) A blood sample may be taken under this section only by a person or a class of persons approved by order of the Attorney General, a medical practitioner or a registered nurse within the meaning of the Nurses (Registered) Act.

(4) A blood sample taken under this section may only be analyzed by a person or class of persons approved by order of the Attorney General using a method approved as suitable for the purposes of this section by order of the Attorney General.

1982-73-2, proclaimed effective October 1, 1983

Refusal to give a blood sample

220.3 (1) A person who without reasonable excuse fails or refuses to comply with a demand made under section 220.2(1) commits an offence and is liable on conviction to a fine of not less than $100 and not more than $2,000 or to imprisonment for not less than 7 days and not more than 6 months, or both.

(2) A person who is convicted of an offence under subsection (1) is automatically and without notice prohibited from driving a motor vehicle for 6 months as provided under section 92.

1982-73-2, proclaimed effective October 1, 1983

Proof of blood sample

220.4 (1) In a proceeding under section 220.1, where a blood sample of the defendant was taken

(a) pursuant to a demand made under section 220.2(1) or pursuant to section 220.2(2), and

(b) as soon as practicable after the time when the offence was alleged to have been committed and in any event no later than 2 hours after that time,

evidence of the result of an analysis of the blood sample is, in the absence of any evidence to the contrary, proof of the proportion of alcohol in the blood of the defendant at the time when the offence was alleged to have been committed.

(2) In a proceeding under section 220.1, where a blood sample of the defendant was taken pursuant to a demand made under section 220.2(1) or pursuant to section 220.2(2), a certificate of a person referred to in section 220.2(3) or (4) stating that he has

(a) taken the blood sample of the defendant, or

(b) made an analysis of the blood sample of the defendant and stating the result of his analysis

is evidence of the statements contained in the certificate without proof of the signature of the person appearing to have signed the certificate.

British Columbia Motor Vehicle Act Sections

(3) In a proceeding under section 220.1, where a blood sample of the defendant was taken pursuant to section 220.2(2), a certificate of a medical practitioner stating that, in his opinion, at the time the blood sample was taken the defendant was incapable, due to physical or mental trauma, of comprehending the nature of a demand under section 220.2(1) is evidence of the statements contained in the certificate without proof of the signature of the person appearing to have signed the certificate.

(4) In a proceeding under section 220.1, where a blood sample of the defendant was taken pursuant to a demand made under section 220.1(1) or pursuant to section 220.2(2), the proportion of alcohol in the blood sample of the defendant at the time of the analysis shall be deemed to be the same as the proportion of alcohol in the blood of the defendant when the sample was taken, unless the defendant proves otherwise.

(5) A defendant against whom a certificate described in subsection (2) or (3) is produced may, with leave of the court, require the attendance of the person who made the certificate for the purposes of cross examination.

(6) No certificate shall be received in evidence pursuant to subsection (2) or (3) unless, before the trial, the defendant has received reasonable notice that the certificate will be introduced and has received a copy of the certificate.

(7) The Lieutenant Governor in Council may prescribe the form and content of certificates to be used in this section.

1982-73-2, proclaimed effective October 1, 1983

Civil liability

220.5 (1) No action lies, for damages or otherwise, against any person as a result of the taking or analyzing of a blood sample under section 220.2 except an action for damages arising out of negligence in technical procedures used in taking the blood.

1982-73-2, proclaimed October 1, 1983

No legal obligation

220.6 Nothwithstanding anything in section 220.1 to 220.5, a person authorized to take a blood sample under section 220.2(3) may decline to take a blood sample from a person where to do so would, in the opinion of a medical practitioner, endanger the person's health or life.

1982-73-2, proclaimed October 1, 1983

British Columbia Motor Vehicle Act Sections

Prohibition against driving by court

90. (1) For the purpose of this section, "convicts" includes the granting of an absolute or conditional discharge,

(2) Where a court convicts a person of an offence under

(a) this Act or the regulations

(b) sections 233, 234, 235, or 236 of the Criminal Code, or

(c) section 203, 204, 219 of the Criminal Code where the section was contravened by means of a motor vehicle,

the court may

(d) consider the person's driving record, and

(e) notwithstanding that the person is or may be subject to another prohibition from driving, prohibit the person from driving a motor vehicle for a definite period of time if the court considers that the facts of the case or the person's driving record or both the facts of the case and his driving record when taken together justify the prohibition.

(3) Subsection (2) does not apply

(a) where neither the defendant nor his agent or counsel appears before the court at the time of conviction, or

(b) where the defendant is convicted of an offence under section 76.

(4) Where a court prohibits a person from driving a motor vehicle under this section, the court shall order that the prohibition

(a) take effect immediately

(b) continue for the full day of each day of the prohibition, and

(c) continue for consecutive days.

(5) A person who is prohibited from driving a motor vehicle under this section for a period of more than 3 years, may make an application to the court that prohibited him from driving for a review of the length of the prohibition, after 3 years of the prohibition have elapsed and after notifying the superintendent.

(6) On an application under subsection (5), the court may, where it considers that it is not contrary to public interest, reduce the length of the prohibition or cancel the prohibition.

(7) Where the court reduces the length of a prohibition or cancels a prohibition under subsection (6), it shall forthwith notify the superintendent of its decision.

1982-36-19, proclaimed effective September 1, 1982; 1984-30-51, effective June 11, 1984 (B.C. Reg. 165/84);[amended 1985-52-29, not in force, amendment not included]

British Columbia Motor Vehicle Act Sections

91. [Repealed 1982-36-19, proclaimed effective September 1, 1982] [Re-enacted 1982-36-19, to be proclaimed]

Automatic prohibition against driving on conviction

92. (1) For the purpose of this section, "convicted" includes the granting of an absolute or conditional discharge.

(2) A person who is convicted of an offence under

(a) section 88, 94, 220.1(1) or 220.3(1),

(b) section 233, 234, 235, or 236 of the Criminal Code, or

(c) section 203, 204, 219 of the Criminal Code where the section was contravened by means of a motor vehicle

is automatically and without notice prohibited from driving a motor vehicle for 12 months from the date of sentencing, the date that the passing of sentence is suspended, the date of being granted an absolute or conditional discharge or the date a court makes a disposition under the Young Offenders Act (Canada) or the Young Offenders Act (British Columbia)

(3) Subsection (2) does not apply where neither the defendant nor his agent or counsel appear before the court at the time of conviction.

1982-36-19, proclaimed effective September 1, 1982; 1982-73-1, proclaimed effective October 1, 1983; 1984-30-52,53, effective June 11, 1984 (B.C. Reg. 165/84; [amended 1985-52-60, not in force, amendment not included)

APPENDIX B

Executive Summary of CounterAttack Traffic Research Papers, 1987. Ministry of Attorney General, British Columbia, 1988.

EXECUTIVE SUMMARY

TRAFFIC CONVICTIONS AND TRAFFIC ACCIDENTS

Frequency, Types and Patterns of Traffic Convictions and Frequency and Type of Traffic Accidents

These analyses show that a relatively high traffic violation conviction count and relatively frequent and severe traffic accidents are associated with the demographic characteristics of being male and under 30 years of age, and that a relatively small proportion of the drivers (5%) are having a relatively large proportion of the reported accidents (44%).

A factor analytic examination of the pattern and frequency of nine common traffic violations revealed two separate but closely related factors: a "reckless driving" factor marked by speeding, disobeying stop sign, disobeying signs or signals, disobeying red light and speeding in a school zone convictions; and a "drinking-driving" factor marked by 24 hour drinking-driving licence suspension, drinking-driving criminal convictions, excess speed for conditions and speeding convictions. High scores on these factors related to the driver being male and under 30 years of age, to having had relatively frequent traffic accidents and to having had relatively severe traffic accidents. Further, both factors were positively related to traffic accident frequency when the effects of driver age were removed.

The emergence of a reckless driving violation pattern and a drinking-driving violation pattern and their strong relationship to both traffic accident frequency and severity leads to a number of conclusions: First, in addition to following closely in traffic (Evans and Wasielewski, 1982), the driving behaviours loading on the factors can be argued to represent a high-risk driving style that involves speeding, ignoring traffic signs and signals (e.g. red lights, stop signs) and drinking driving.

Second, the existence of a reckless driving factor that is distinct from the drinking driving factor and that is equally predictive of accident involvement allows a wider base of violations to be used to identify high-risk drivers. Thus, not only convicted drinking drivers, but any driver with a violation pattern that resulted in a high score on either the reckless driving or drinking-driving factor could be considered as a high-risk driver. Legislation could thus be considered that would require these drivers to take remedial driver training, and that training ought to relate to all aspects of traffic safety as opposed to focussing on alcohol-related topics.

Finally, the close relationship between the reckless driving factor and the drinking-driving factor argues for the existence of an overall high-risk driving style that includes but is not limited to drinking driving.

Traffic Accident Frequency, Traffic Convictions, Driver Age and Driver Gender. British Columbia, June 1980 - December 1984.

The results of these analyses suggest that a relatively small proportion of the drivers (5%) are having a relatively large proportion of the traffic accidents (44%), and that these drivers tend to be young males. In terms of traffic-related convictions, those with frequent accidents have a record of frequent convictions, especially convictions having to do with speeding and intersection behaviours (e.g. red light, yellow light, stop sign). In addition, they are more likely to not wear seat belts, to not be able to produce a valid driver's licence, and to be driving uninsured.

TRAFFIC ACCIDENT TYPES

Fatality-Producing vs. Injury-Only Traffic Accidents: Trends, Characteristics, Persons Involved, and Consequences. British Columbia, 1985

To summarize, the proportion of fatality-producing to injury-only casualty traffic accidents has gradually declined over the past 10 years to a 1985-86 level of 1.7%, with the highest seasonal proportion occurring during the summer months. While the charge history of drivers in injury-only accidents is similar to that of drivers in fatal accidents (Mercer, 1986), accident characteristics and other driver characteristics differ between the typical fatal and typical injury-only traffic accident.

From these analyses the typical fatal accident in B.C. in 1985 occurred on a rural, high-speed road in the dark on a weekend. It most likely involved a single vehicle that either failed to negotiate a curve, or simply ran off the side of a straight road while if a second vehicle was involved there was often a head-on collision. The most frequent contributing factors to the accident were excessive speed and/or alcohol.

Drivers in fatal accidents were most frequently male (80%). About 45% of the male drivers 34 years of age or older carried passengers, and the passengers were slightly more likely to be male than female, while half of the younger male drivers carried passengers and the passengers were much more likely to be male than female. On the other hand, about 56% of both younger and older female drivers in fatal accidents carried passengers, and the passengers were much more likely to be female than male. Further, occupants of vehicles driven by males were less likely to wear restraint devices than were occupants in vehicles driven by females. Finally, the average age of male victims in fatal accidents was 33 years and female victims was 39 years.

In contrast, a typical injury-only accident occurred on an urban, 50 kph road in the daylight during the evening "rush hours". It most likely involved one vehicle which rear-ended or struck another vehicle at 90° at an intersection. The most frequent contributing factors were driving without due care and/or failure to yield the right of way.

There was a higher proportion of female drivers in injury-only accidents than in fatal accidents, although the majority of drivers in injury-only accidents (70%) were male. Overall, drivers in injury-only accidents were less likely to carry passengers than were drivers in fatal accidents. A third of the male drivers 34 years of age or older carried passengers and the passengers were slightly more likely to male than female, while 39% of the younger male drivers carried passengers and the passengers were appreciably more likely to be male. On the other hand, while fewer of the older female drivers carried passengers than did the younger female drivers, in all cases the passengers were more likely to be female than male. Restraint device use rates were similar for occupants of vehicles driven by males as for vehicles driven by females. Finally, the average victim age for both males and females in these injury-only accidents was less than for victims of fatal accidents, with an average male victim age of 30 years and an average female victim age of 33 years.

Admittedly, every traffic accident is unique, and within both the fatal and injury-only categories there are a number of subsets that have not been addressed (e.g. pedestrian, commercial vehicle, motorcycle). However, in order to design counter-measures and identify target groups, accident types need to be characterized. Indeed, the young male drinking driver in a high-speed, night-time, single-vehicle crash is a well-recognized central figure in fatal accidents. However, when injury-only casualty accidents are contrasted with fatal accidents, other important and exponentially more common accident configurations emerge. For example, the female driver becomes a very significant factor, accounting for almost a third of the drivers in injury-only accidents, while the older male driver with no passengers going through intersections during "rush hours" also gains in importance. Also of central importance in injury-only accidents are the contributing factors of carelessness and failure to yield, and the daytime and during the week as accident times.

It follows that to further reduce traffic accident frequencies, educators and policy-makers might expand public education programs and police enforcement priorities to more comprehensively address the full range of target groups and casualty accident types.

Intersection Casualty Accidents: Trends, Characteristics, Persons Involved, and Consequences. British Columbia, 1985

To summarize, 42% to 46% of all casualty accidents in B.C. occurred where one road crossed another, with the highest number and lowest proportion occurring during the summer months. They

happened most frequently in business and shopping areas, especially during the evening "rush hours". They tended to occur in daylight or in good artificial lighting and primarily in good weather, although about a third occurred in wet conditions.

Turning to the traffic control devices at the accident scene, a third of the casualty intersection accidents occurred where there were no traffic signs or signals, a third where there were stop signs, and a third where there were stop lights. Of the latter, 45% occurred on a red light, 45% on a green light, and 10% on an amber light. It is noteworthy that, contrary perhaps to the popular impression, only 3% of all intersection casualty accidents occurred on an amber light and 14% on a red light, leaving 83% not associated with automatic traffic signal violations.

Over 80% of these intersection casualty accidents were multiple-vehicle accidents, with only 9% involving pedestrians and 8% involving bicycles. In 43% of the instances one vehicle struck the other at a 90° angle, while 28% involved rear-end collisions. The causes included Failure to Yield the Right of Way (29%), Driving Without Due Care (25%), Unsafe Speed (10%) and Alcohol (9%).

Comparing intersection casualty accidents to non-intersection casualty accidents, the drivers in intersection accidents were older (average age 35 years), carried fewer passengers (65% carried no passengers), and reported a higher frequency of restraint device use. While 67% of the drivers in these accidents were male, half of all male drivers and over half of all female drivers who had casualty traffic accidents in 1985 had them at intersections. The male drivers in these accidents reported lower restraint device use in their vehicles and carried older passengers than did the female drivers. Overall, intersection casualty accidents produced a lower proportion of fatalities and less severe injuries than did non-intersection casualty accidents.

In terms of countermeasures, high-visibility police enforcement campaigns at controlled intersections has shown promise as a way to reduce, at least for the duration of the campaign, driving behaviours that could lead to traffic accidents (Mercer, 1986). However, as two-thirds of intersection accidents occurred at intersections with no traffic signs or signals, or at intersections with only stop signs, and as these sorts of intersections are far too numerous to be included in targetted intersection enforcement campaigns, it follows that driver education dealing with right-of-way and driver courtesy may help to reduce these accidents. Further, as a high proportion of intersection casualty accidents involve rear-end collisions, driver education on following distances might be considered.

The target groups for such education materials ought to focus on adult drivers carrying no passengers who are on the road during "rush hours", and on adult female drivers carrying young passengers. Themes that could prove useful might include the notion of not carrying the day's work stress over into the task of driving home, of responsibility to those waiting at home, and, especially for the female driver, responsibility for her young passengers.

Finally, unlike the speed-and-alcohol traffic accidents that tend not to occur at intersections, intersection casualty accidents appear to be less of a product of "lifestyle" and more of a product of inattention, discourtesy, and perhaps ignorance of the basic rules of the road. Consequently, with a combination of public education and police enforcement programs, there is reason to hope that these accidents could be successfully reduced.

Aspects of Weather-Related Casualty Traffic Accidents, British Columbia, 1984

In 1984 the 2,587 reported weather-related casualty traffic accidents in British Columbia comprised 11.1% of all casualty traffic accidents, caused 3,270 injuries and 48 deaths, and cost the Insurance Corporation of B.C. approximately $52.6 million in insurance payments for medical and other damages. Weather was the fifth most frequently cited cause of casualty traffic accidents, following Driving Without Due Care (29.1%), Failure to Yield Right of Way (17.5%), Alcohol Involvement (15.2%), and Excessive Speed (15.2%), and in sum totalled nearly the number of pedestrian and motorcycle casualty accidents combined.

In many ways the typical weather-related casualty traffic accident resembles the typical alcohol-related casualty traffic accident: both are high-speed single-vehicle runoffs that occur at night at a curve in the road in rural areas and involve young male drivers. The differences between them are that in the one instance the driver's ability is impaired by the driving conditions (rain, snow, ice) and in the other instance the driver's ability is impaired by alcohol.

Finally, it must be stressed that these casualties must not be treated as if there is nothing that can be done to reduce their number and the attendant expense to the province. Short-term, high-intensity public education during periods of elevated risk can reduce alcohol-related accidents, and there is no compelling reason to assume that the same cannot be accomplished with regard to weather-related accidents. Educational programs and campaigns, combined with improved road surface management, have the potential to significantly reduce weather-related casualty traffic accidents in British Columbia.

CAUSES OF FATAL TRAFFIC ACCIDENTS

Coroner and Police (MV104) Accident Cause Frequencies, British Columbia, 1984

A comparison of police (MV104) and coroner reports on the causes of fatal traffic accidents in British Columbia in 1984 revealed substantial differences between the two data sets. Generally, the police portrayed these accidents as primarily the driver's fault, in terms of dangerous and illegal driving

behaviours, with a high proportion of the accidents being alcohol-related. On the other hand, coroners' reports tended to characterize these fatalities as more of a product of circumstances, less as the driver's fault, and less as a consequence of alcohol impairment.

As the police have more experience in accident investigation and have standardized accident investigation protocols and forms, it is likely their data are more reliable than the coroners' written text. However, the difference between these two perspectives needs further investigation. Consequently it is recommended that similar fatal accident protocols and forms be developed for each group so that their perceptions of fatal traffic accident causes can be more accurately compared and agreement on the probable causes achieved.

The Measurement of the Contribution of Alcohol to Fatal Traffic Accidents, British Columbia, 1984.

The relationships among police accident report data, coroner data and Blood Alcohol Content (BAC) levels is examined for a set of fatal traffic accidents. The problems with each data source are discussed and the first step in designing a system combining these sources is suggested.

TRAFFIC ACCIDENT EPIDEMIOLOGY

A Brief Comparison of Injury and Fatal Traffic Accidents for the First Half of 1985 with those for the First Half of 1986

This paper presents driver/passenger information, locations, contributing factors, and collision types for injury and fatal accidents.

Contributing Factors to Casualty Motor Vehicle Crashes in British Columbia, 1985

This is a tabular presentation of some of the primary causes of casualty traffic accidents broken down by police reporting detachments.

The Percentage of Injuries and Deaths Associated with Drinking Driving by Police Jurisdiction: British Columbia, 1985

This report lists, for each police reporting jurisdiction, the number of persons injured and the percentage of those who were injured in alcohol-related traffic accidents. In addition, similar information is presented for fatalities.

Locations of Casualty Motor Vehicle Crashes in British Columbia, 1985

This is a tabular presentation of the locations of casualty traffic accidents (e.g. intersection, bridge) broken down by police reporting detachments.

Types of Casualty Motor Vehicle Crashes in British Columbia, 1985

This is a tabular presentation of the types of casualty accidents (e.g. vehicle-pedestrian, commercial vehicle) by police reporting detachments.